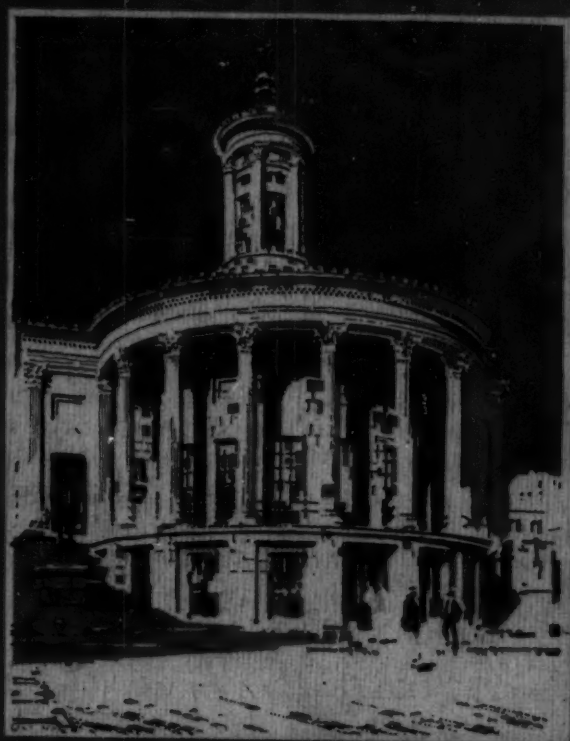
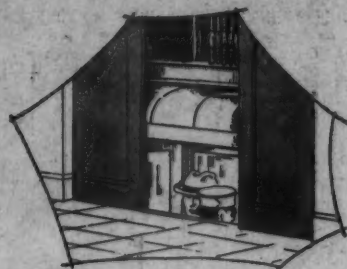


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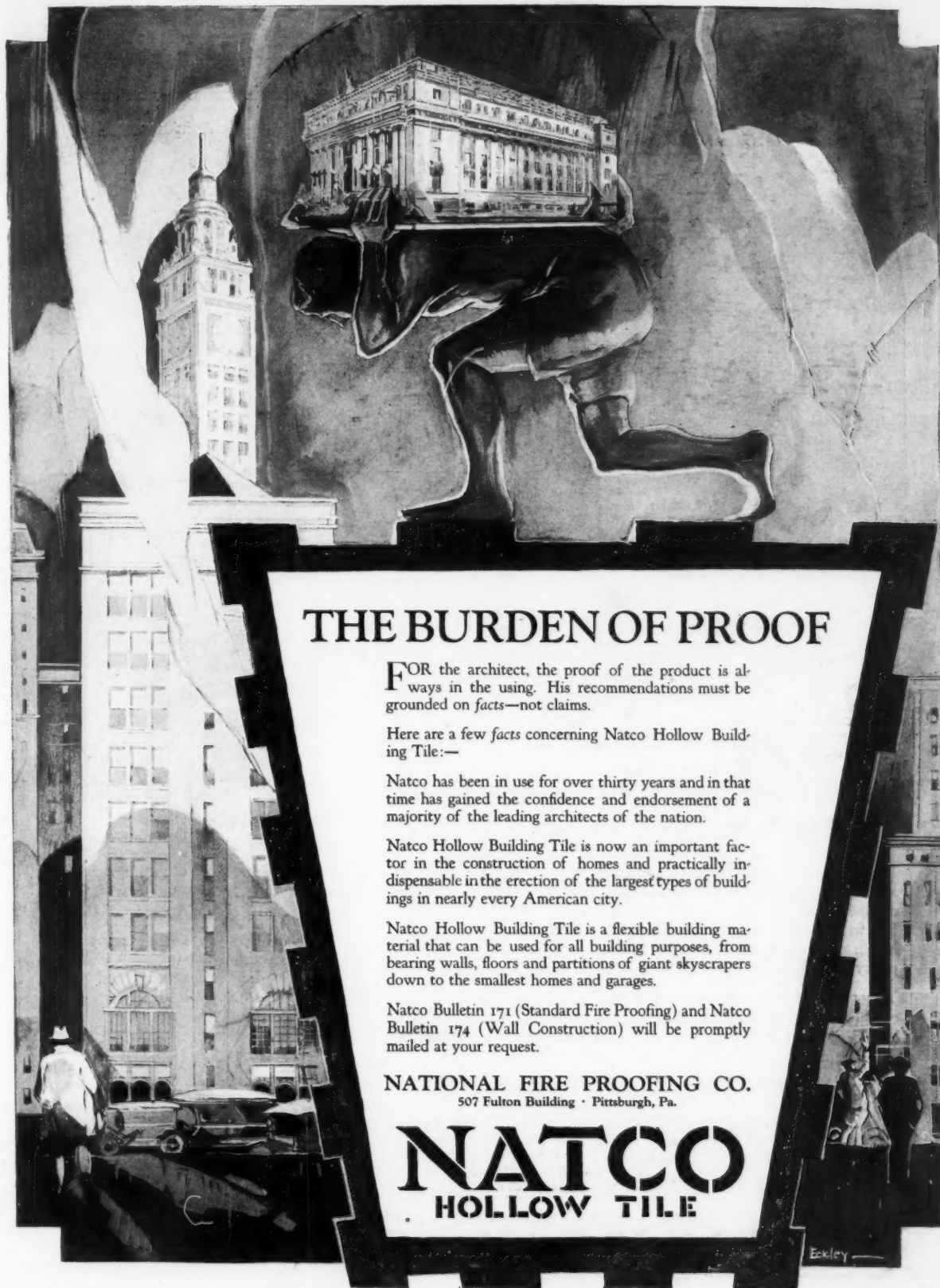
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Volume XL

THE ARCHITECTURAL FORUM

Number 5

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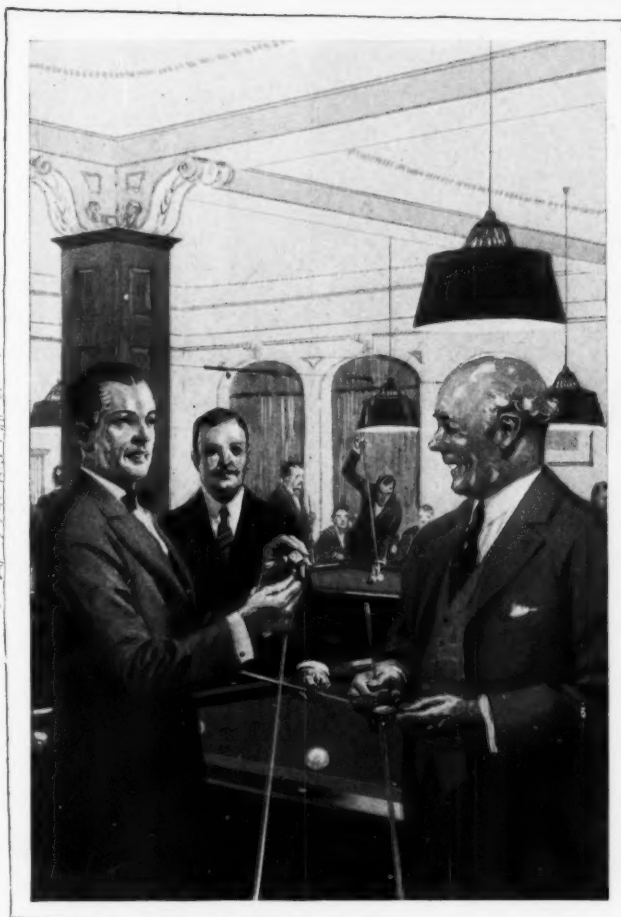
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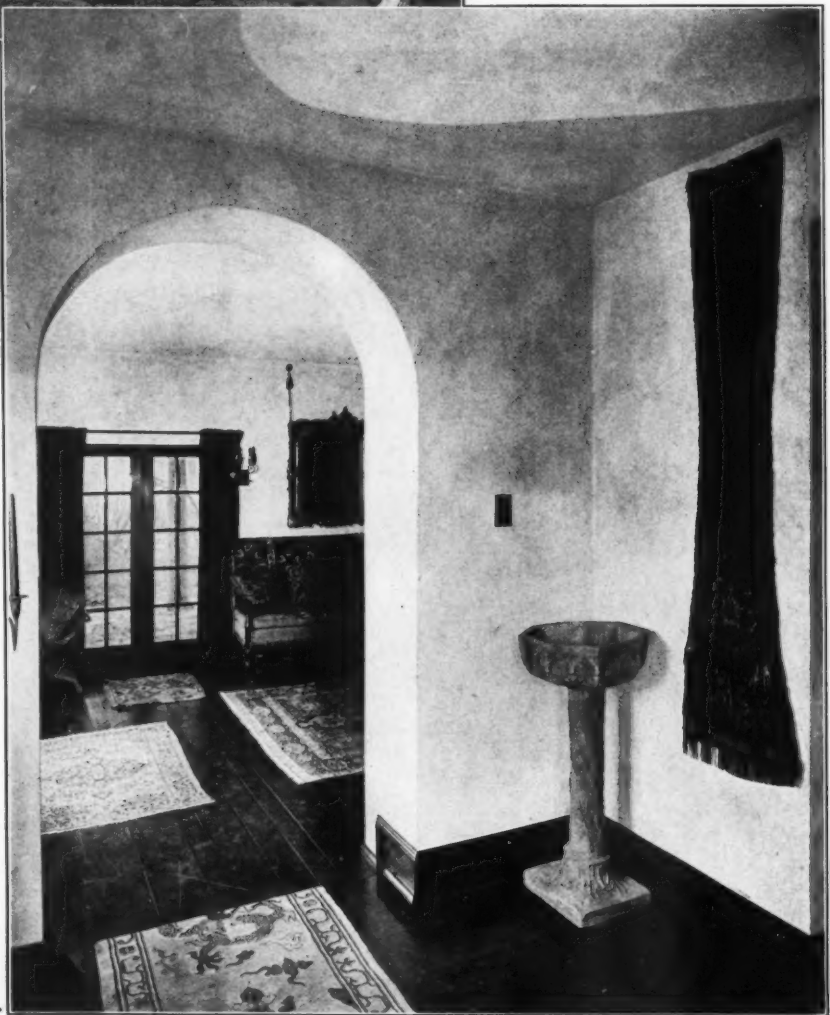
623-633 South Wabash Avenue, CHICAGO



THE loggia facing the gardens, showing masterly treatment of stucco surfaces.

Zimmerman, Saxe & Zimmerman
Architects

LOOKING from entrance hall through living room to loggia. Sand finish can be employed with satisfaction if the plaster is reinforced against cracks.



BOOK DEPARTMENT

English Homes of the Earlier Tudor Period

STUDY of sixteenth century England presents a direct connection between the history of the times and the change and development which were to come to English architecture during the period to follow. During much of the early part of the reign of Henry VIII the dominating influence in England was Cardinal Wolsey's. Secure in his dignities as Archbishop of York and Lord Chancellor of England he obtained from Clement VII, at the king's insistence (and his own) the added office of Papal Legate, thus giving himself wide powers in Church as well as State, and to provide funds for his works at Hampton Court and Christ Church, his college at Oxford, he suppressed a number of abbeys and monasteries, applying their property to the cost of his building operations. Circumstances calculated to lead to the break between Henry and the Papacy were not lacking, and having been shown how great and how easily legalized were the benefits of confiscation, there was little to prevent the spoliation of the Church and the religious orders by the most absolute monarch western Europe had ever known. During Henry's reign there came complete ruin to the religious and charitable foundations which had been laboriously built up during one thousand years. The building of the cathedrals, abbeys, churches and priories which were the glories of English architecture came to an abrupt end; henceforth the triumphs of English building were to be chiefly in the domestic or the civic order.

Architecture during the remainder of the Tudor era was therefore almost entirely of a domestic character. Many an old country home in any part of England is only too obviously an adaptation of a building intended for service of quite another nature; even the names of "abbeys," "priories" and the like remain. But Henry could build up in one way, just as he could pull down in another. During his reign there came to England from the continent workers in all the many crafts which enter into building,—master designers, wood carvers, plaster modelers, and others proficient in the working of metals and glass. With the large resources which circumstances provided there was begun a brilliant period in English architecture and decoration which extended over the reign of Henry, and which indeed outlived the Tudor

dynasty. Modern building in England was then begun.

In this excellent book, the first volume upon the second of the great historic periods of English architecture, and therefore part of an extended work upon the subject, there is set forth in text as well as in excellent half-tone illustrations the architectural splendor of this era. Because the later mediæval period had not been definitely left behind, or rather because so large a part of the building which it deals with was of the mediæval period, early Tudor architecture possesses a certain

archaic charm and character which are strong. Windows were for the most part small individually, but were frequently grouped or placed in small bays or shallow "oriels." Roofs were ample and frequently presented great expanses which were covered with slate or lead; chimneys were frequently grouped or "stacked," and were often adorned with skillful, intricate carving of the brick. Within the architecture was fully as striking as without. The half-timber used for constructing so many of the buildings often appeared upon the inner as well as the outer walls; rooms were frequently lofty,



Giffords Hall, Suffolk

Illustration from English Homes; Early Tudor

and whatever their height ceilings were likely to be of wood, often of open timber beautifully carved. The windows, single or grouped, were filled in with glass leaded in small panes or diamonds, frequently with panels of glass painted or stained. It will be noted, of course, that in all this there was a strongly ecclesiastical feeling, largely or chiefly because so many of the structures had but recently been remodeled and changed from ecclesiastical to domestic uses, but also because the time had not yet come when methods of building religious and domestic structures were widely different.

In the architecture of this period there is much of interest in affording excellent precedent for present-day work. While much was of vast extent and of a scale too large to be really adaptable, there was much which was moderate and even modest in character, and such work abounds in suggestion for use today, when its appeal is quite as strong as in the sixteenth century. The period is one rich in precedent for modern use.

ENGLISH HOMES. Period II, Volume I, Early Tudor, 1485-1558. By H. Avray Tipping, 396 pp. 11 x 15 ins. Price \$25. Charles Scribner's Sons, New York.

Any book reviewed may be obtained at published price from THE ARCHITECTURAL FORUM

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ILLUSTRATED HISTORY OF FURNITURE

By Frederick Litchfield

A study of the furniture of western Europe during all the historic periods, especially valuable for its treatment of the furniture of the later Stuart and the Georgian eras. Considerable attention is given to paneling and other details of architectural background.

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FURNITURE OF THE PILGRIM CENTURY

By Wallace Nutting

The "Pilgrim Century" was the period from 1620 to 1720. This work critically considers the furniture used in New England during that century and is especially useful in view of the popularity of the early Colonial styles and the wide use being made of modern reproductions of its furniture.

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FURNITURE MASTERPIECES OF DUNCAN PHYFE

By Charles Over Cornelius

Furniture and decoration of the later Colonial and the early Federal periods in America are possessed of a value which will endure, and the furniture of Duncan Phyfe represents the period at its best. This volume is perhaps the most complete and authoritative on an early American furniture maker.

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ENGLISH CHAIRS

In the development of the chair there is illustrated the entire history of English furniture, and this excellent work deals with the effect upon English chairs of influence from France, Holland, Flanders, Italy and Spain. A work of importance to architects, decorators and students.

28 collotype plates, 10 x 12 inches; about 90 illustrations.

Price, \$15

The importance of furniture renders it necessary that the architect be familiar with its development and the changes which came with each of the styles. Any of the books listed will be sent, carriage prepaid, upon receipt of price, to any address in the United States.

ROGERS & MANSON COMPANY

383 Madison Avenue
New York

SOME EIGHTEENTH CENTURY DESIGNS FOR INTERIOR DECORATION. With Details Selected from the Published Work of Abraham Swan. Text, with 76 plates; 10½ x 15½ ins. Price £1. John Tiranti & Co., 13 Maple Street, Tottenham Court Road, London.

THE eighteenth century saw the publication in England of countless works on architecture, furniture and decoration in its various phases, fortunate indeed for the architect or decorator of today, since these volumes which constitute a rich treasure house of design were published under the direction of the masters whose work formed the subject matter of the volumes. But by their very size and scope the great works published by these master architects overshadow the highly valuable if less important and monumental volumes which record the work of men of less renown,—men who would have been considered supremely gifted had they lived and worked at almost any other period of England's history. To this honored company belongs Abraham Swan. His was not to be the building of the vast palaces in town or country, which after almost two centuries still set forth the splendor of the period; rather, his clientele was formed among the thrifty and prosperous middle class, or affluent merchants to whom he gave design which while not competing in either size or cost with much which was being done, was equally correct and fully as beautiful.

Swan's designs have the merit of being practical and adaptable for use today when only very rarely is an architect able to use the designs of sumptuous interiors which fill so many of the books. Like all the English architects of the eighteenth century Swan placed the greatest value upon accurate proportions and good fenestration. On these two fundamentals everything depended. His designs therefore were carefully drawn for rooms of different sizes, and as published show perhaps "Three sides of a room about 30 ft. by 20 ft. and 12 ft. high as drawn," or "Design for wall treatment for a large room with a doorway in center panel." Swan's decorative schemes are very direct in their main lines and generally rely upon the division of the walls of a room into three parts, consisting of "surbase" or dado, a paneled surface occupying the greater part of the height, and an entablature or cornice uniting wall and ceiling. The wall panels are often alternately wide and narrow. As already said, everything depended upon good proportion's being maintained throughout, and he points out the danger of making the entablature or cornice which crowns the walls and the dado which invariably appears at their base disproportionate to the height of the room. When the entablature is large and the dado high, the room appears lower than it really is, whereas a light entablature and a dado of moderate size give an effect of height. He also points out that if the dado is high the sills of the windows must also be high, making it difficult for anyone seated in the room to see out comfortably. If the room is 10 feet high he advised 2 feet, 5 inches for the height of the dado, and for every foot of increase in the height of the room he advocated an additional ¾-inch to the height of the dado. He draws attention to the fact that when the frieze is enriched it should be enlarged beyond its normal proportions and the architrave diminished, so that the whole entablature may not exceed its proper dimension, which

is regulated by the height of its cornice. He seems always to give the cornice a height equal to one eighteenth of that of the room. If the height of the cornice thus obtained is divided into five parts, he gave three such parts to the frieze and four to the architrave, but when the frieze is enlarged for the sake of its enrichments, then what is added to it must be taken out of the height of the architrave. These are useful and practical rules, and their application can be studied in the series of plates given in this volume, together with the details of dados, entablatures, cornices and panel mouldings, which offer a wide range of decorative treatment.

To harmonize the awkward raking lines of a staircase with the prevailing horizontal character of the rest of the interior was a difficult problem and one for which Swan sought solutions that could be used in modest town and country houses. The measure of his success may be judged from the selection of plates reproduced in this book, which include many details of balustrades and "continuous" and "cut" strings. Complete drawings are given of one grand staircase, which shows stucco panels and enriched string-courses strongly reminiscent of designs by Ware and Henry Flitcroft, the latter a contemporary who built much, but apparently published nothing in his own name.

From the large number of plates in Swan's "Designs in Architecture" devoted to plans and elevations of entire houses, it is evident that he had hopes of influencing the type of dwelling most likely to be erected in the country and on the outskirts of country towns by traders and professional men. Here again his simpler designs are good, and show commendable restraint and for the most part freedom from the projecting blocks which too often interrupt the continuity of door and window architraves in the earlier facades of the century. Severely symmetrical, the best of these avoid trivialities and rely, as Swan's work invariably does, upon good composition and fenestration. Apart from their plans which no longer satisfy modern requirements, these designs have their value today if only for the sake of their breadth and repose, qualities so often lost sight of in a restless age which too readily sees dignity and distinction sacrificed to originality.

A HISTORY OF ITALIAN PAINTING. By Frank Jewett Mather, Jr., 495 pp., 5 x 7½ ins. Price \$3.50. Henry Holt & Co., New York.

IN this volume Prof. Mather of Princeton has gathered essays which have grown out of his lectures given at the Cleveland Art Museum during 1919 and 1920. These lectures were adapted, the author tells us in the preface, to the needs of students who were beginners and who wanted to learn, and the published essays have been prepared and edited for much the same class.

The arrangement of the work is admirable, for instead of considering the subject in chapters built up around various great masters among painters, Prof. Mather has divided the history of Italian painting into epochs, in each epoch considering the work of the individual painters who lived during that era. Thus in Chapter VI, devoted to "The Golden Age," study is made of the great painters of the period—Raphael, Michaelangelo, Gentile da Fabriano and others, the great of the epoch.

REDEEMING OLD HOMES. By Amelia Leavitt Hill. 160 pp. 5½ x 8¼ inches. Price \$3. Henry Holt & Co., New York.

DURING the past five years the cost of building, even the most modest kind of house has been so great that frequently the impossibility of building has brought about the rehabilitating of countless old houses which might otherwise never have entered upon what are for them periods of renewed prosperity.

In many localities all over the country there are houses which for different reasons have fallen upon evil days and which may even have reached advanced stages of decrepitude, but which none the less present some very definite advantages. Particularly if they were built 40 or 50 years ago, before the advent of the cheap and flimsy building methods which now obtain, their timbers are likely to be of goodly sizes and strength. The chimneys are usually well built and are likely to be in good condition, excepting where they project above the roof lines, and all in all the construction is likely to be such as to well justify any reasonable expenditure in fitting these old houses for occupancy. Of course they are almost always wholly without any of the plumbing equipment which is now regarded as so necessary; very rarely is there heating of any sort except fireplaces, and any system of lighting is entirely lacking. But a house of the period mentioned generally warrants the expense and trouble of restoration, particularly when the surroundings are attractive, as is frequently the case.

This volume deals quite fully with the restoration or "redeeming" of such places. It discusses the structural restorations likely to be needed, such as the use of stucco

or clapboards to cover houses which were originally covered with shingles; additions to existing buildings are taken up, and questions of water supply, heating, lighting and plumbing discussed, all at considerable length.

PLUMBING QUESTIONS AND ANSWERS. Useful information for Plumbers, Architects, Estimators, Inspectors and Draftsmen. By Joseph E. Taggart. 104 pp.; 5 x 7 ins. Price \$1.50. U. P. C. Book Company, Inc., New York.

ALTHOUGH it has been written in the "question and answer" form, this volume is by no means of the "primer" order. It will be found useful by designers, draftsmen and specification writers in architects' offices, though it might be said to have been written from the point of view of a practical plumber or plumbing contractor, and is based throughout on the requirements of the New York Plumbing Code, which the author says is the result of years of effort and experiment and now stands as a model not excelled in any city in the world.

The volume begins by answering questions regarding the qualifications expected of a plumber and the examinations he must undergo and the licenses he must receive. It then takes up the subject of filing drawings and descriptions; the defining of terms; materials and methods; yard areas; drains; traps; sewage lifts; gas pipes and fixtures, and so on through all the mazes of an important subject in which accuracy is essential to an installation which is to do the work expected of it. The text, which is extremely well written and as free from technicalities as a work of this nature could well be, is made plain by countless diagrams and tables which add to its value.

THE DAVANZATI PALACE, FLORENCE

A Restored Palace of the XIV Century, Measured and Drawn, Together with Short Descriptive Text, by
LOUIS CONRAD ROSENBERG

THIS work is issued to provide for architects, decorators and students a volume of moderate cost on one of the old Florentine palaces, a building which abounds in suggestions readily adapted to present-day work. The Davanzati Palace is one of the most notable of the early Italian palaces and belongs to a period when Italian architecture excelled in simplicity, charm, and all the qualities which lead to its use today.

In this monograph the famous building is illustrated in a most careful manner; half-tone reproductions of original photographs show the exterior and different rooms of the interior, all accompanied by measured drawings and full descriptions.



MEASURED drawings of bases, columns, capitals, mouldings and corbels; mantels, ceilings, door and window trim, paneled doors and inner blinds or shutters; floors laid in tile or specially modeled Roman brick; wrought iron hinges, bolts, knockers, escutcheons, holders for flag poles or torches, and hooks for wall hangings. Measured drawings for polychrome ornament on plaster walls or wooden coffered ceilings or tabernacle doors, with descriptions of colors used.

Architects interested in the design of any structural detail of an early Italian renaissance building will find here examples which in vigor and freshness leave nothing to be desired.

70 pp., 10½ x 13½ ins. Bound in cloth. Price \$10

ROGERS AND MANSON COMPANY

383 Madison Avenue, New York

THE EDITOR'S FORUM

IN MEMORY OF LLOYD WARREN

AS a memorial to the late Lloyd Warren, whose interest in the Beaux Arts Institute of Design was well known and who was its Director, the Institute sends one man to the Ecole des Beaux Arts in Paris each year after his winning a national architectural competition. He receives about \$2,000 a year for two years for his expenses and cost of travel. To add to the existing endowment in order to make this prize permanent the Institute is raising \$40,000. Up to the present time about \$25,000 has been received from private individuals and architects, either with or without Beaux Arts training, and the Institute invites contributions which may be made to the Treasurer, Henry R. Sedgwick, 522 Fifth Avenue, New York.

The work of the Beaux Arts Institute of Design, at 126 East 75th Street, New York, in giving practically free education in architecture, sculpture and mural decoration is well known; it now has over 1,400 students, both college men and draftsmen.

HONORS FROM FRENCH GOVERNMENT

THE medal of honor of the Societe des Architectes Diplomes par le Gouvernement, which is given by the French Government from time to time to laymen for distinguished service in the advancement of art and architecture, has been awarded this year to Charles Moore, who, as is well known to architects, has been for many years chairman of the National Fine Arts Commission in Washington, the only body in our national government which occupies itself with art. The presentation of this medal took place at a dinner given by the S. A. D. G. at the Metropolitan Club in New York on Saturday, March 1, at which addresses were made by His Excellency, the French Ambassador, M. Jusserand, Royal Cortissoz, Mr. Moore, Dr. John H. Finley of the *New York Times*, and Chester H. Aldrich, of Delano & Aldrich, president of the American group of this society. Among those present were: Cass Gilbert, Thomas Hastings, John Russell Pope, William M. Kendall, Louis C. Ayers, Harvey W. Corbett, H. V. B. Magonigle, Charles A. Platt, Siddons Mowbray, James A. Fraser, Frederic A. Delano, Edwin H. Denby, Herbert Adams, Thomas Adams, Donn Barber, John M. Howells, Benjamin W. Morris, and John Van Pelt.

The medal given by the Society to the school of architecture having the best record of accomplishment for the year was awarded to Yale University School of Fine Arts at a meeting held on March 3.

SUMMER COURSES IN ARCHITECTURE

CCOURSES in architecture will be given this summer at the Carnegie Institute of Technology, Pittsburgh. According to an announcement, the Department of Architecture in the College of Fine Arts will give intensive six weeks courses from June 16 to July 26 in design, outdoor sketching, descriptive geometry, shades and shadows, and perspective.

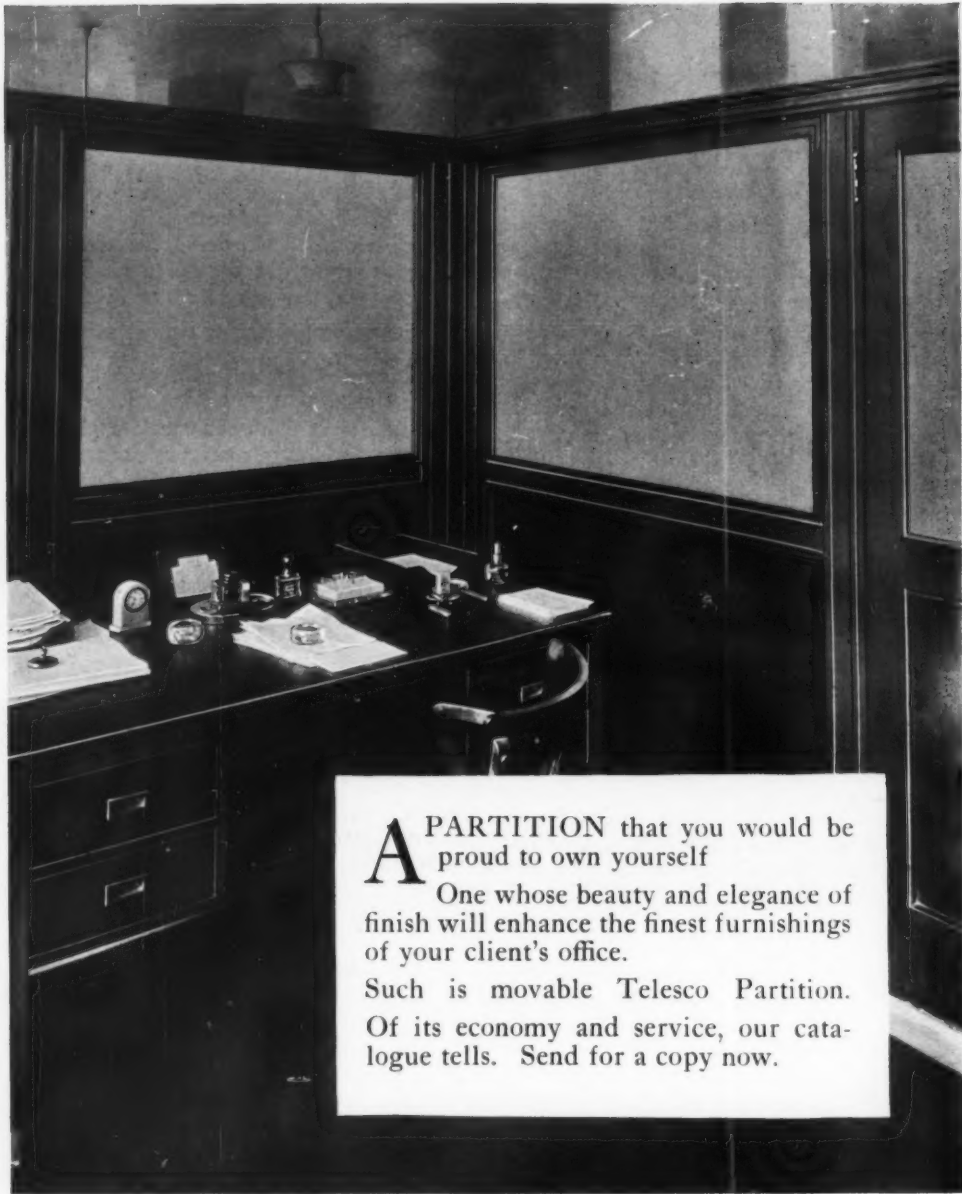
Six and eight weeks courses are also announced in chemistry, physics, mathematics, mechanics, English, economics, commercial law, drafting, surveying, and various forms of shop work. Courses of six weeks will be given to teachers and supervisors of home economics, public school music, fine and applied arts, and manual and industrial arts.

RECOGNITION BY R. I. B. A.

IN according to the Department of Architecture of McGill University "recognition" as a school of architecture, the Royal Institute of British Architects has extended to the Montreal institution an honor hitherto bestowed upon but few schools and those all within the United Kingdom. For some years the Institute has conducted a series of examinations, three in number, leading to candidature as "Associate" of the Royal Institute of British Architects; this associateship could be obtained only by passing these examinations, and has long been accepted as a professional qualification of high standing, but graduates of schools which are recognized are exempt from all examinations except that in professional practice, which will be held in Canada.

FONTAINEBLEAU SCHOOL OF FINE ARTS

THOSE in charge have issued a prospectus which reviews the work of the years during which the Fontainebleau School of Fine Arts has been in existence and gives some information regarding its future sessions. It will be remembered that the school offers each year a three months session, from June 25 to September 25, courses being arranged for architects, for painters and sculptors, and for fresco painters. There is also offered a two months course for teachers who cannot remain for the more extended session. The school is conducted in the old Palace of Fontainebleau, and the students are lodged in the village and take their meals at the table conducted for the school. Only 100 students can be received, and applications should be made for architects, to Whitney Warren; for others, to Ernest Peixotto, both at 119 East 19th Street, New York.



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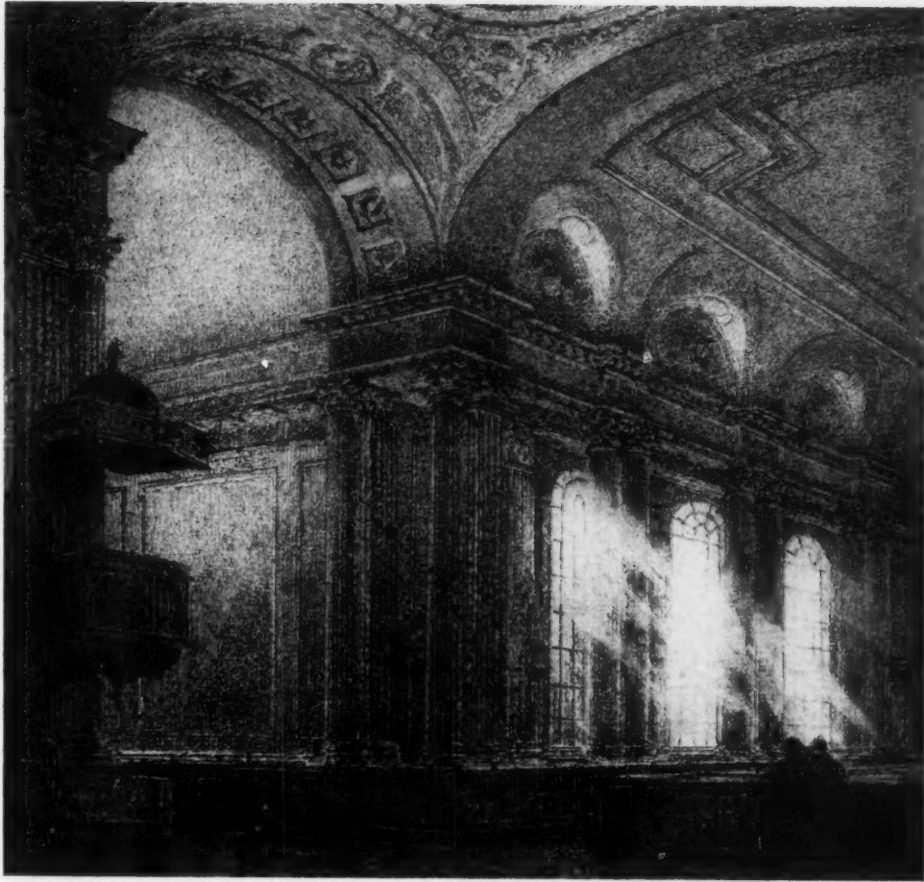
The New York Stock Exchange Building is equipped throughout with Telesco Partition.

Trowbridge & Livingston, Archs.
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INTERIOR OF A CHURCH BY THOMAS HASTINGS
FROM PENCIL DRAWING BY Y. TERSIAN

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The ARCHITECTURAL FORUM

VOLUME XL

MAY 1924

NUMBER 5

Modern Architecture

By THOMAS HASTINGS

An Address Delivered Before the Royal Institute of British Architects

WE American architects are oftentimes confronted with the question why we have not an architecture of our own—one which is essentially American; and why it is that so many of us who have studied in Paris seem inclined to inculcate the principles of the Ecole des Beaux Arts into our American architecture. The majority of people do not seem to realize that in solving the problems of modern life the essential is not so much to be national, or American, as it is to be modern, and of our *own* period.

The question of supreme interest is: What influence has life in its different phases upon the development of architectural style? Style in architecture is that method of expression in the art which has varied in different periods, almost simultaneously throughout the civilized world, without reference to the different countries, beyond slight differences of national character, mostly influenced by climate and temperament.

Surely modern architecture should not be the deplorable creations of the would-be style inventors, the socialists who have penetrated the world of art farther than they have the world of politics, who are more concerned in promulgating an innovation than in establishing a real improvement—so-called Futurists, New Thinkers, Cubists, art nouveau followers, all unrelated to the past without thought of traditions. No more should modern architecture be the work of the illogical architect, living in one age and choosing a style from another, without rhyme or reason, to suit his own fancy or that of his client.

The important and indisputable fact is not generally realized that from prehistoric times until now each age has built in one, and only one, style. Since the mound builders and cave dwellers, no people, until modern times, ever attempted to adapt a style of a past epoch to the solution of a modern problem. In such attempts is the root of all modern evils. In each successive style there has always been a distinctive spirit of contemporaneous life from which its root drew nourishment. But in our time, contrary to all historic precedents, there is this confusing selection from the past. Why should we not

be modern and have one characteristic style expressing the spirit of our own life? History and the law of development alike demand that we build as we live, according to our means.

One might consider the history and development of costumes to illustrate the principle involved. In our dress today we are modern, but sufficiently related to the past—which we realize when we look upon the portraits of our ancestors of only a generation ago. We should not think of dressing as they did, or of wearing a Gothic robe or a Roman toga; but, as individual as we might wish to be, we should still be inclined, with good taste, to dress according to the dictates of the day.

The irrational idiosyncrasy of modern times is the assumption that each kind of problem demands a particular style of architecture. Through prejudice, this assumption has become so fixed that it is common to assume that if building a church or a university we must make it Gothic; if a theater, we must make it Renaissance. One man wants an Elizabethan house, another wants his house early Italian. With this state of things, it would seem as though the serious study of character were no longer necessary. Expression in architecture, forsooth, is only a question of selecting the right style.

The two classes with which we must contend are, on the one hand, those who would break with the past, and, on the other, those who would select from the past according to their own fancy.

Style in its growth has always been governed by the universal and eternal law of development. If from the early times, when painting, sculpture, and architecture were closely combined, we trace their progress through their gradual development and consequent differentiation, we cannot fail to be impressed by the way in which one style has been evolved from another. This evolution has always kept pace with the progress of the political, religious, and economic spirit of each successive age. It has manifested itself unconsciously in the architect's designs, under the imperatives of new practical problems, and of new requirements and conditions imposed upon him. This continuity in the history

of architecture is universal. As in nature the types and species of life have kept pace with the successive modifications of lands and seas and other physical conditions imposed upon them, so has architectural style in its growth and development *until now* kept pace with the successive modifications of civilization. For the principles of development should be as dominant in art as they are in nature. The laws of natural selection and of the survival of the fittest have shaped the history of architectural style just as truly as they have the different successive forms of life. Hence the necessity that we keep and cultivate the historic spirit, that we respect our historic position and relations, and that we realize more and more in our designs the fresh demands of our time, more important even than the demands of our environment.

What determining change have we had in the spirit and methods of life since the revival of learning and the Reformation to justify us in abandoning the Renaissance or in reviving mediæval art—Romanesque, Gothic, Byzantine, or any other style? Only the most radical changes in the history of civilization, such as, for example, the dawn of the Christian era and of the Reformation and the revival of learning, have brought with them correspondingly radical changes in architectural style.

Were it necessary, we could trace two distinctly parallel lines, one the history of civilization and the other the history of style in art. In each case we should find a gradual development, a quick succession of events, a revival, perhaps almost a revolution and a consequent reaction, always together, like cause and effect, showing that architecture and life must correspond. In order to build a living architecture, we must build as we live.

Compare the Roman orders with the Greek and with previous work. When Rome was at its zenith in civilization, the life of the people demanded of the architect that he should not only build temples, theaters, and tombs, but baths, basilicas, triumphal arches, commemorative pillars, aqueducts, and bridges. As each of these new problems came to the architect, it was simply a new demand from the new life of the people, a new work to be done. When the Roman architect was given such varied work to do, there was no reason for his casting aside all precedent. While original in conception, he was called upon to meet these exigencies only with modifications of the old forms. These modifications very gradually gave us Roman architecture. The Roman orders distinctly show themselves to be a growth from the Greek orders, but the variations were such as were necessary so that the orders might be used with more freedom in a wider range of problems. These orders were to be brought in contact with wall or arch, or to be superimposed upon one another, as in a Roman amphitheater. The Roman recognition of the arch as a rational and beautiful form of construction, and the necessity for the more intricate and elaborate floor plan, were

among the causes which developed the style of the Greeks into what is now generally recognized as the Roman or Classic style.

We could multiply illustrations without limit. The battlements and machicolated cornices of the Romanesque, the thick walls and the small windows placed high above the floor, tell us of an age when every man's house was indeed his castle, his fortress, and his stronghold. The style was then an expression of that feverish and morbid aspiration peculiar to mediæval life. The results are great, but they are the outcome of a disordered social status not like our own, and such a status could in nowise be satisfied with the simple classic forms of modern times, the architrave and the column.

Compare a workman of today building a Gothic church, slavishly following his detail drawing, with a workman of the fourteenth century doing such detail work as was directed by the architect, but with as much interest, freedom, and devotion in making a small capital as the architect had in the entire structure. Perhaps doing penance for his sins, he praised God with every chisel stroke. His life interest was in that small capital; for him work was worship; and his life was one continuous psalm of praise. The details of the capital, while beautiful, might have been grotesque, but there was honest life in them. To imitate such a capital today, without that life, would be affectation. Now a Gothic church is built by laborers whose one interest is to increase their wages and diminish their working hours. The best Gothic work has been done and cannot be repeated. When attempted, it will always lack that kind of mediæval spirit of devotion which is the life of mediæval architecture.

If one age looks at things differently from another age, it must express things differently. We are still living today in the period of the Renaissance. With the revival of learning, with the new conceptions of philosophy and religion, with the great discoveries and inventions, with the altered political systems, with the fall of the Eastern Empire, with the birth of modern science and literature, and with other manifold changes all over Europe, came the dawn of the modern world; and with this modern world there was evolved what we should now recognize as the modern architecture, the Renaissance, which pervaded all the arts and which has since engrossed the thought and labor of the first masters in art. This Renaissance is a distinctive style in itself, which, with natural variations of character, has been evolving for almost four hundred years.

So great were the changes in thought and life during the Renaissance period that the forms of architecture which had prevailed for a thousand years were inadequate to the needs of the new civilization, to its demands for greater refinement of thought, for larger truthfulness to nature, for less mystery in form of expression, and for greater convenience in practical living. Out of these necessities of the times the Renaissance style was evolved

—taking about three generations to make the transition—and around no other style have been accumulated such vast stores of knowledge and experience under the lead of the great masters of Europe. Therefore whatever we now build, whether church or dwelling, the law of historic development requires that it be Renaissance, and if we encourage the true principles of composition it will involuntarily be a modern Renaissance, and with a view to continuity we should take the eighteenth century as our starting point, because here practically ended the historic progression and entered the modern confusion.

Imagine the anachronism of trying to satisfy our comparatively realistic tastes with Gothic architectural sculpture or with paintings made by modern artists! Never, until the present generation, have architects presumed to choose from the past any style in the hope of doing as well as was done in the time to which that style belonged. In other times they would not even restore or add to a historic building in the style in which it was first conceived. It is interesting to notice how the architect was even able to complete a tower or add an arcade or extend a building, following the general lines of the original composition without following its style, so that almost every historic building within its own walls tells the story of its long life. How much more interesting alike to the historian and the artist are these results!

In every case where the mediæval style has been attempted in modern times the result has shown a want of life and spirit, simply because it was an anachronism. The result has always been dull, lifeless, and uninteresting. It is without sympathy with the present or a germ of hope for the future—only the skeleton of what once was. We should study and develop the Renaissance and adapt it to our modern conditions and wants, so that future generations can see that it has truly interpreted our life. We can interest those who come after us only as we thus accept our true historic position and develop what has come to us. We must accept and respect the traditions of our fathers and grandfathers and be, as it were, apprenticed by their influence. Without this we shall be only copyists, or be making poor adaptations of what was never really ours.

The time must come—and, I believe, in the near future—when architects of necessity will be educated in one style, and that will be the style of their own time. They will be so familiar with what will have become a settled conviction and so loyal to it that the entire question of style, which at present seems to be determined by fashion, fancy, or ignorance, will be kept subservient to the great principles of composition which are now more or less smothered in the general confusion.

Whoever demands of an architect a style not in keeping with the spirit of his time is responsible for retarding the normal progress of the art. We must

have a language if we would talk. If there be no common language for a people, there can be no communication of ideas, either architectural or literary. I am convinced that the multiplicity of printed books and periodicals written by literary critics and essayists who have not even been apprenticed but are writing with authority about art, has, perhaps, been more instrumental than anything else in bringing about this modern confusion. I believe that we shall one day rejoice in the dawn of a modern Renaissance, and, as always has been the case, we shall be guided by the fundamental principles of the classic. It will be a modern Renaissance, because it will be characterized by the conditions of modern life. It will be the work of the Renaissance architect solving new problems, adapting his art to an honest and natural treatment of new materials and of new conditions. Will he not also be unconsciously influenced by the twentieth century spirit of economy and by the application of his art to all modern industries and speculations?

Only when we come to recognize our true historic position and the principles of continuity in history, when we allow the spirit of our life to be the spirit of our style, recognizing, first of all, that form and all design are the natural and legitimate outcome of the nature or purpose of the object to be made—only then can we hope to find a real style everywhere asserting itself. Then we shall see that consistency of style which has existed in all times until the present generation; then, too, shall we find it in every performance of man's industry, in the work of the artist or the artisan, from the smallest and most insignificant jewel or book cover to the noblest monument of human invention or creation, from the most ordinary kitchen utensil to the richest and most costly furniture or painted decoration.

We must all work and wait patiently for the day to come when we shall work in unison with our time. Our Renaissance must not be merely archaeological—the literal following of certain periods of the style. To build a French Louis XII or Francis I or Louis XIV house, or to make an Italian cinquecento design, is indisputably not modern architecture. No architect until our times slavishly followed the characteristics of any particular period, but he used all that he could get from what preceded him, solving such new problems as were the imperatives of his position.

What did a man like Pierre Lescot, the architect of the Henry II Court of the Louvre, endeavor to do? It would have been impossible for him actually to define the style of his own period. That is for us, his successors, to do. For him the question was how to meet the new demands of contemporaneous life. He studied all that he could find in Classic and Renaissance precedents applicable to his problem. He composed, never copying, and always with that artistic sense of the fitness of things which was capable of realizing what would be harmonious in his work. In the same

way all architects, at all times, contributed to a contemporaneous architecture, invariably with modifications to meet new conditions. This must be done with a scholarly appreciation of that harmonious result which comes only from a thorough education. So, with freedom of the imagination and unity of design, an architecture is secured expressive of its time.

Again, as in all times until now, there will be design and not mere novelty in the carriage, automobile, or boat, as well as in the endless variety of implements of utility or amusement.

How is it with us in modern times? Not only do many architects slavishly follow the character of some selected period, but they also deliberately take entire motives of composition from other times and other places to patch and apply them to our new conditions and new life. Every man's conscience must speak for itself as to whether such plagiarism is right; but while the moral aspect of this question has very little to do with art, yet intellectually such imitative work, though seemingly successful, positively stifles originality, imagination, and every effort to advance in the right direction.

The way is now prepared for us to endeavor to indicate what are some of the principal causes of the modern confusion in style. With us Americans an excessive anxiety to be original is one of the causes of no end of evil. The imagination should be kept under control by given principles. We must have ability to discern what is good among our own creations and courage to reject what is bad. Originality is a spontaneous effort to do work in the simplest and most natural way. The conditions are never twice alike; each case is new. We must begin our study with the floor plan and then interpret that floor plan in the elevation, using forms, details, and sometimes motives, with natural variations and improvements on what has gone before. The true artist leaves his temperament and individuality to take care of themselves.

Some say that if this is all that we are doing there is nothing new in art; but if we compose in the right way there can be nothing that is not new. Surely you would not condemn nature for not being original because there is a certain similarity between the claw of a bird and the foot of a dog, or between the wing of a bird and the fin of a fish. The ensemble of each creature is the natural result of successive stages of life, with variations of the different parts according to the principles of evolution. There are countless structural correspondences in the skeletons of organic life, but these show the wonderful unity of the universe; and yet, notwithstanding this unity, nature is flooded with an infinite variety of forms and species of life.

We must logically interpret the practical conditions before us, no matter what they are. No work to be done is ever so arbitrary in its practical demands but that the art is elastic and broad

enough to give these demands thorough satisfaction in more than a score of different ways. If only the artist will accept such practical imperatives as are reasonable, if only he will welcome them, one and all, as friendly opportunities for loyal and honest expression in his architecture, he will find that these very conditions will do more than all else besides for his real progress and for the development of contemporaneous art in composition.

Never resent what at first thought may seem to be limitations and in despair try to change conditions which, if reasonable, should suggest new and interesting design. Frederick the Great said: "The great art of policy is not to swim against the stream, but to turn all events to one's own profit. It consists rather in deriving advantage from favorable conjunctures than in preparing such conjunctures." And when told of the death of the Emperor Charles VI, he said to a friend who was with him: "I give you a problem to solve: When you have the advantage, are you to use it or not?"

The architects in the early history of America were distinctly modern and closely related in their work to their contemporaries in Europe. They seem not only to have inherited traditions but religiously to have adhered to them. I believe that it is because of this that the genuine and naïve character of their work, which was of its period, still has a charm for us which cannot be imitated. McComb, Bulfinch, Thornton, Latrobe, L'Enfant, Andrew Hamilton, Strickland, and Walters were sufficiently American and distinctly modern, working in the right direction, unquestionably influenced by the English architecture of Inigo Jones, Sir Christopher Wren, James Gibbs, Sir William Chambers, and others. Upjohn and Renwick, men of talent, were misled, alas, by the confusion of their times, the beginning of this modern chaos, the so-called Victorian-Gothic period.

Gifted as Richardson was, and great as was his personality, his work is always easily distinguished, because of its excellent quality, from the so-called Romanesque of his followers. But I fear the good he did was largely undone because of the bad influence of his work upon his profession. Stumpy columns, squat arches, and rounded corners, without Richardson, form a disease from which we are only just recovering. McComb and Bulfinch would probably have frowned upon Hunt for attempting to graft the transitional Loire architecture of the fifteenth century upon American soil, and I believe that all will agree that the principal good he accomplished was due to the great distinction of his art and to the moral character of the man himself rather than to the general influence and direction of his work.

Whether we agree with Charles F. McKim or not in wanting to revive in the nineteenth century the Italian Renaissance of the sixteenth century, the art of Bramante, San Gallo, and Peruzzi, he had perhaps more of the true sense of beauty than

any of his predecessors in American art. His work was always refined, individual, and had a distinctly more classic tendency in his most recent buildings. We have seen that the life of an epoch makes its impress upon its architecture. It is equally true that the architecture of a people helps to form and model its character, in this way reacting upon it. If there be beauty in the plans of our cities and in the buildings which adorn our public squares and highways, its influence will make itself felt upon every passer-by. Beauty in our buildings is an open book of involuntary education and refinement, and it uplifts and ennobles human character. It is a song and a sermon without words. It inculcates in a people a true sense of dignity, a sense of reverence and respect for tradition, and it makes an atmosphere in its environment which breeds the proper kind of contentment, that kind of contentment which stimulates true ambition. If we would be modern, we must realize that beauty of design and line construction build well, and with greater economy and endurance than construction which is mere engineering. The qualitative side of a construction should first be considered, then the quantitative side. The practical and the artistic are inseparable. There is beauty in nature because all nature is a practical problem well solved. The truly educated architect will never sacrifice the practical side of his problem. The greatest economic as well as architectural calamities have been performed by so-called practical men with an experience mostly bad and with no education.

It is, I believe, a law of the universe that the forms of life which are fittest to survive—nay, the very universe itself—are beautiful in form and color. Natural selection is beautifully expressed, ugliness and deformity are synonymous; and so it is in the economy of life—what would survive must be beautifully expressed.

Has the world beheld in art that which we call style, changing with each age, the visible expression of man's inner consciousness, appearing above the horizon with the dawn of civilization, gradually developing in orderly sequence, one degree upon another, following the course of time? Has all this come into existence only to disappear again on the other side of the small circle of its horizon? Has history recorded its progress from dawn to twilight, unconscious of its rapid fading into the darkness of night? Or will it rise again following the natural laws of the universe? Or, like the falling star, is it lost in the confusion of eternal space, never to appear again?

As each age tells its own story in its own language, shall we tell our story to future generations in our own way? A great tide of historic information has constantly flowed through the channel of monuments erected by successive civilizations, the art of each age being an open book recording the life and spirit of the epoch, oftentimes verifying the truth of its own literature, an integral part of the whole

scheme of evidence. The archæologist thus supplements the historian, but alas, with the chain divided, the future will have drifted away from the past into a vast ocean of discord, where architectural continuity will have ceased to exist.

The recently discovered buried cities of Assyria give us a vivid idea of the civilization lost to history. The pyramid of Cheops and the temples of Karnak and Luxor tell us more of that ingenuity which we cannot fathom and of the grandeur and life of the Egyptian people than the scattered and withered documents or fragments of inscriptions that have chanced to survive the crumbling influences of time.

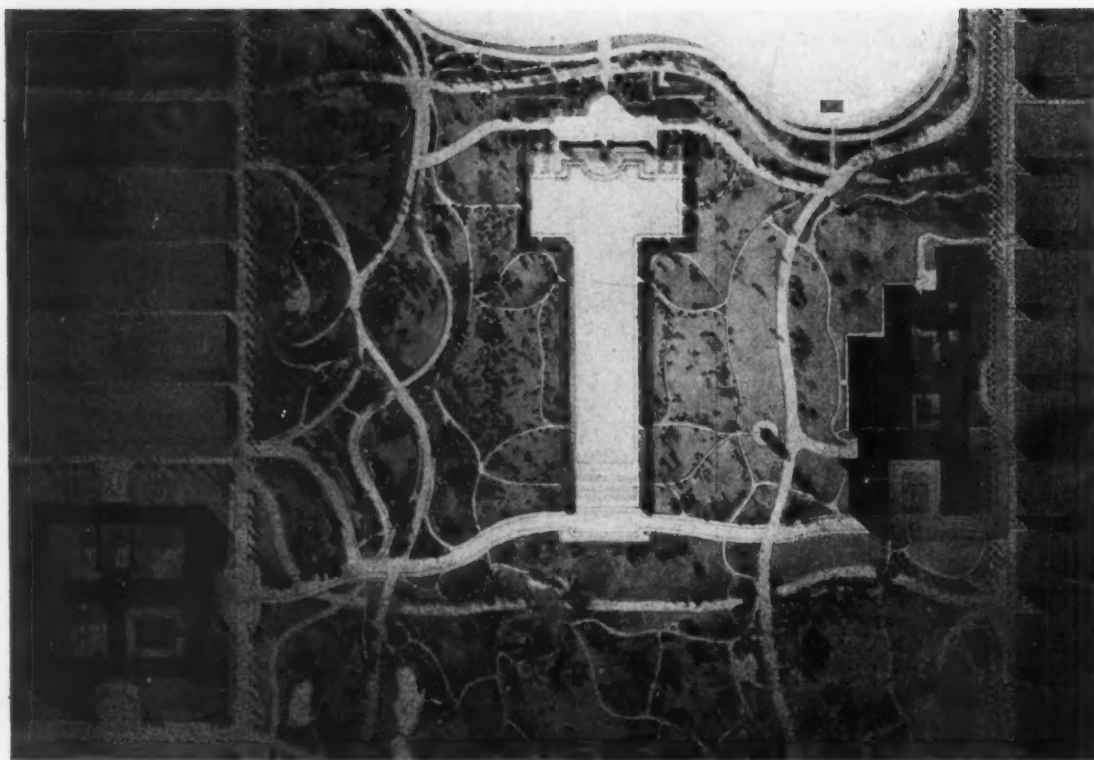
The Parthenon and the Erechtheum bespeak the intellectual refinement of the Greeks as much as their epic poems or their philosophy. The triumphal arches, the aqueducts, the Pantheon, and the basilicas of Rome tell us more of the great constructive genius of the early republic and the empire of the Cæsars than the fragmentary and contradictory annals of wars and political intrigues. The unsurpassed and inspiring beauty of the Gothic cathedrals which bewilder us, and the cloisters which enchant us, impress on our minds a living picture of the feverish and morbid aspirations of mediæval times, a civilization that must have had mingled with its mysticism an intellectual and spiritual grandeur which the so-called dark ages of the historians have failed adequately to record; and in America, even amid the all-absorbing work of constructing a new government, our people found time to speak to us, of today, in the silent language of their simple Colonial architecture of the temperament and character of our forefathers.

And when in the tumult of this modern warfare men's passions overcome their reason, and the great monuments of history that have survived the ages are subjected to the onslaught of modern armament, let us hope that they may not be further subjected to the work of the architect who would fain restore them in the style which has passed and so rob us of all that is left. Let them be protected by every device from further destruction, to tell the story of this twentieth century civilization, this vaunted culture which has failed to respect and protect its heritage.

Will our monuments of today adequately record the splendid achievements of our contemporaneous life, the spirit of modern justice and liberty, the progress of modern science, the genius of modern invention and discovery, the elevated character of our institutions? Will disorder and confusion in our modern architectural styles express the intelligence of this twentieth century? Would that we might learn a lesson from the past—that modern architecture wherever undertaken, might more worthily tell the story of the dignity of this great epoch and be more expressive of our contemporaneous life!

Design and Plan of War Memorial, Central Park

THOMAS HASTINGS, Architect



✓The Proposed War Memorial for New York

By THOMAS HASTINGS

WHEN I was requested to make plans for the proposed War Memorial on the site of the lower reservoir, I consented to undertake the work only on condition that a committee of architects, landscape architects and sculptors might be appointed to determine upon the design and the propriety of the undertaking, with a view to protecting the public from the one-man idea, *whether city official, architect, selfishly interested, or newspaper editor.*

As a mere method of selection, the presidents of the different architectural and sculptural societies were invited to act on the advisory committee; in this way six unprejudiced men of ability were appointed, understanding that they were acting only as individuals. They unanimously agreed upon two of the ablest and best known landscape architects to add to their number. After long and serious study and a thorough consideration of both propriety and design, they unanimously voted in favor and without a dissenting voice. First, they seriously considered the possible influence of the monument upon the landscape of the park itself and the likelihood of its location there becoming an entering wedge for the placing of other monuments in the park. All agreed, however, that it was *too* evident that no encroachment was contemplated, but that on the contrary securing an addition of approximately 37 acres of land would be a splendid accomplishment and could be obtained only in some such way as that now under consideration. All were primarily interested in taking advantage of this splendid opportunity which may never occur again to bring about the removal of the rigid walls of the reservoir in order to add this large area to our park system, admittedly inadequate for our increased population.

It was observed that this reservoir which never has been a part of the park and is now practically out of use, with its high structural walls built long before the park was contemplated, would some day not far away, with the westerly extension of the museum already planned, form a canyon of architectural construction, completely obliterating the picturesque and rural character of the east side drive. All agreed, therefore, upon the removal of the high walls and upon a simple informal treatment of the entire area with a narrow central lagoon not as large as the mall leading to the proposed monument, placed at the northerly end where now stands a wooden cottage which already occupies about as many square feet of land as would be taken by the proposed monument. This cottage is now practically secluded, and the monument would be equally secluded from all parts of the present park, to be seen only from viewpoints within the area of the newly created park addition; i.e., the monument will not be in the present park or influence its design except-

ing to increase very largely its present area. Finally, the choice of this site was considered to be better than any other contemplated, every possible suggestion having been considered, because of its central location geographically and as regards population, and more particularly because here it could make its own atmosphere, and the character, dignity, and solemnity of its design could never be influenced or diminished by tall buildings, commercial or domestic, or by any other kind of encroachments.

The city officials in charge of the Memorial, the committee of experts, the Park Department, and the Municipal Art Commission, have all without one dissenting voice approved the undertaking. When the Park Commissioner submitted his report with his approval to the Art Commission, this committee of artists and distinguished laymen gave the entire matter its most conscientious consideration; it visited the site, studied the drawings, made helpful suggestions, and finally gave its unanimous and unqualified preliminary approval, which necessarily includes the approval of the propriety of the undertaking, asking for models and further information in order to give its final approval of the structure itself. It would be difficult to explain at length how seriously everything has been considered and how much enthusiasm has been expressed by artists, defenders and friends of the park, intelligent laymen.

With this explanation I hope there may be no further thought on the part of anyone to obstruct an undertaking to which so many have freely and unselfishly contributed their time and thought in solving this most interesting problem as a permanent expression of our gratitude to the youth of our country who have made the supreme sacrifice. Why not encourage those in authority and those who are giving time and expert thought, bearing the responsibility of so serious an undertaking? Cheap print, affording boundless opportunities to uninformed criticism, has done more harm to art in my lifetime than all other influences combined. Bryant Park would be on Fifth Avenue today, making a splendid approach to the New York Public Library, were it not for fear of opposition when we as architects proposed this change of program. The artist knows exceptions to all rules, while the journalist is too often chained to his journalistic policies when once expressed in the columns of his paper. In this way he becomes an obstructionist sometimes without realizing it. If he would only undertake to give the public much-needed constructive suggestions, in consultation with expert advice, much good might be accomplished in the betterment of our city parks; I refer more especially to our smaller parks and squares. They were all designed in the period of the brownstone, high stoop house and the *gilt engraved* walnut furniture, the worst of American art.



CENTRAL MOTIF OF PROJECTED WAR MEMORIAL
TO BE PLACED ON SITE OF PRESENT LOWER RESERVOIR, CENTRAL PARK
THOMAS HASTINGS, ARCHITECT

Reducing Fire Risk in Residential Construction

DEMONSTRATED IN THE HOUSE OF WHARTON CLAY, WINNETKA, ILL.

ZIMMERMAN, SAXE & ZIMMERMAN, Architects

TO build a small house combining artistic charm with practical requirements is a test of architectural ability. Among the thousands of small houses built throughout this country every year comparatively few of them deserve or demand more than passing notice. When a small house is found which attracts and holds attention, careful consideration of the underlying qualities which set it apart and give it distinction, charm and practicability should be undertaken. Such a house has been completed recently by Wharton Clay at Winnetka, Illinois, and is illustrated herewith as a good example of the adaptation of the Italian style of farmhouse to the requirements of a small modern American home. This house also exemplifies to an unusual degree use of some of the recommended and approved fire-retarding methods of frame and stucco construction.

In elevation its rough stucco walls, arcaded porch, overhanging second floor, loggia balcony, iron railings, red tiled roof and broken ridge line all contribute to give this house charm and picturesqueness, which in time will be enhanced by climbing vines and surrounding shrubbery. In plan the house is simple and compact. The entrance door on a raised terrace leads into a small hall from which, through an arched opening, the large living room extending across the west side of the house is entered. The

use of this room for both living and dining purposes is well indicated by a rise of two steps from the floor of the living portion of the room. Here the large fireplace with its Italian mantelpiece and the double casement doors opening onto the stone paved arcaded porch give a pleasant and livable effect. The dining end is still further successfully defined by delicate wrought iron railings on either side of the two steps leading to the higher level of this part of the room. A small library, butler's pantry, kitchen and servants' hall occupy the remainder of the first floor. A garage with servants' rooms above is located at the east end of the house. The second floor contains several well placed bedrooms opening onto a loggia, an iron balcony, or the open roof above the living porch as the case may be. The unadorned or plain plastered walls, very narrow door and window trim, Italian furnishings and fixtures all tend to give an old world atmosphere to this otherwise distinctly modern American interior.

The treatment of the stucco is especially interesting, first because the finish coat is much roughened by dragging the trowel during its application, thus giving deep shadows on the surface, and, second, because two distinct colors have been used in this stucco. This use of two colors, shading from terra cotta in the lower levels and hollows to light cream in the projections and flat surfaces, admir-



General Exterior View



Loggia End of House as Seen from Lawn
Note the unusual character of texture of stuccoed walls

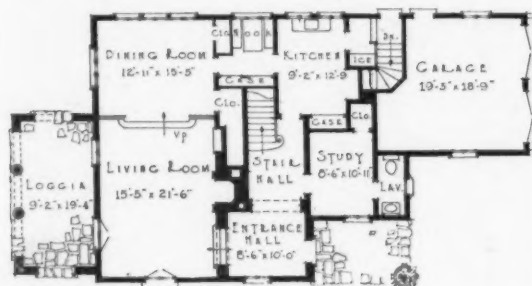
ably suggests the variegated effects of stucco houses in California and Florida, the fame of which has spread far and wide. This fame is due to the fact that in those sections of the country architects and builders have lost their timidity in handling stucco and have taken full advantage of its many possibilities, applying it in bold and interesting designs decorated in brilliant colors which make a welcome contrast to the stereotyped use of this material found generally in other parts of the country. This interesting effect can be created by using appropriately strong pigments in white cement for the last coat, high lighting it with contrasting lighter cement washes before the last troweled coat is set, and also by troweling on cement of two different colors and letting the under color appear through the upper with artistic carelessness. In Florida, one mason near Miami has gained national fame by the simple expedient of using separate color washes on the basic cement. This scheme of brightening up the natural gray cement by well chosen color treatment, keeping it from streaks by the intelligent use of flashings, and avoiding cracks by reinforcing the stucco with proper lathing, will do more to assist the architect in obtaining perfection in the use of stucco

than any other means he could employ.

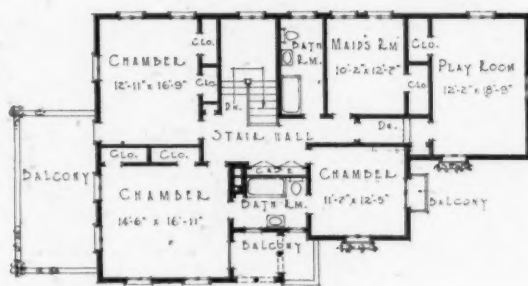
Primarily, this house was designed to develop the possibilities of utilizing standard lumber construction and of finishing the wall and ceiling surfaces in a manner that would make it as nearly fireproof and crackproof as any woodframed building can be. Fire prevention statistics show that only 4 per cent of all residence fires get beyond the buildings where they originate and become contributing causes to fires in other residences. It is therefore evident that the interior construction of a house must resist 96 per cent of the fires. While conflagrations startle us with the number of houses that are involved in any one day, we fail to realize that 1,600 houses are attacked by fire every single day in the United States. Furthermore, the terrific loss of life in residential conflagrations is almost entirely due to fires which origi-

inate in interiors, as there is ample warning for safe exit when fires are communicated from adjoining buildings.

To carry out the fireproofing opportunities lying within the scope of economical lumber construction, advantage was taken of the findings of the Underwriters' Laboratories in which was given a rating of one hour for wood joist and stud construction protected by expanded metal lath. This required the introduction of fire stops at the floor joist levels wherever vertical spaces occurred, a detail of construction which has been advocated widely but seldom used, and the ceilings of all floors and basement as well as all walls and partitions were fully plastered on wire lathing. To further guard against the vertical travel of fire, the stairway from the basement to the first floor was offset from the main stairway. The heating equipment was chosen from among those listed as standard by the Underwriters' Laboratories, and the electric wiring system was carried out strictly in accordance with the findings of the National Board of Fire Underwriters. The construction of every floor was identical, including deadening felt with the type of floor used in the test furnace of the Underwriters' Laboratories, ex-



First Floor Plan



Second Floor Plan

cept that walnut instead of pine boards were used to give an Italian effect to the interior. When such a floor was subjected to fire test of 1700° for over an hour, the wood construction fully protected on the underside was safely able to maintain its designed load for that period.

The garage, being attached to the house, was separated from it as advocated in the Hoover Committee Small House Code by a fire-protected wood stud partition and wood joisted floor. This code also recommended that where glass windows occur in garages, such windows should have metal frames and wire glass. This feature was also adhered to, as well as the suggestion that where possible there should be no direct entrance from the garage into the house. This is accomplished by planning the house so that the rear entrance door is close by the garage door, avoiding any direct connection.

While the house was designed to show that structural members could be of wood and yet be made fire-safe, wood trim was largely eliminated to conform with the Italian style of decoration. Through the main portion of the house plaster reveals, marble window sills and steel screens aided in eliminating combustible material. Wherever non-bearing partitions were necessary, solid 2-inch metal lath and plaster partitions on steel studs were used. The



A View of the Loggia from One End

Italian influence indicated in every architectural detail

fireplace and flue linings and chimney, together with the wood framing around it, were designed in accordance with the recommended practice of the National Board of Fire Underwriters.

The plaster on the walls and ceilings of the entire house is reinforced by expanded metal lath, primarily for its crack- and fire-resisting qualities. Such a base is especially good if the architect attempts use of the typical sand-finished plaster of the Italian style. Although the interior structural wood of this house is safe against the rapid spreading of fire, a factor of safety that every home owner is entitled to, the exterior fire protection is also considered in this model house. The roof has been covered with variegated clay tile, making it impossible for firebrands or sparks to injure the roof, and the wood studs of the exterior walls have been covered with stucco on wire lathing, both on the exterior face and on the back of the lath between the studs. This method, termed "back-plastering," not only forms a scientific reinforcement of the stucco, but also requires a thicker stucco coat having correspondingly greater crack resistance as well as completely sealing the lath against exposure to atmospheric conditions.

The Surface Treatment Committee of the American Concrete Institute has pointed out that successful stuccoing can only be expected by following certain well defined structural methods, the neglect of which will cause disappointment. Among these points the wrapping of brick chimneys with metal fabric for stucco as reinforcement, in such exposed positions as have alternating extremes of temperature, is very essential to permanence. In order that water may not get down behind the stucco, a solid concrete or other impervious chimney cap with a definite drip is necessary to overhang it. The flashing of all vertical surfaces, where they stop at horizontal or inclined surfaces, is an essential detail for



Main Entrance, Balcony and Loggia

the permanence of stucco. Such surfaces in the case of this house occur where the wall over the doorway stops at the balcony level and where the high gable wall stops at the lower roof over the garage. Metal flashings were used at all these places and also in the form of small squares tacked to the end of every window sill and every horizontal piece of projecting wood, thus preventing concentration of water at the ends of these members and avoiding the unsightly and totally unnecessary "tear stains" so often seen in even first class residential construction. Metal flashings were also put over all exposed horizontal wood members and underneath the joints of the wood cap at the top of the loggia walls to prevent water from seeping through between the adjacent pieces of wood and staining or getting behind the stucco at these points. Metal rain water leaders and gutters have also been used to insure against any stains from roof drippings. The more general employment of metal flashing as described here on stucco residences would improve their appearance tremendously without much additional cost.

One of the principal recommendations of the American Concrete Institute Committee on Surface Treatment is that the stucco should not extend to the ground, but that a solid course of brick should be inserted or that the masonry wall should extend up about 12 inches. This recommendation is wise, for earth stains at the base of the stucco and the disintegration from capillary attraction are detrimental to the permanency and good looks of stucco.

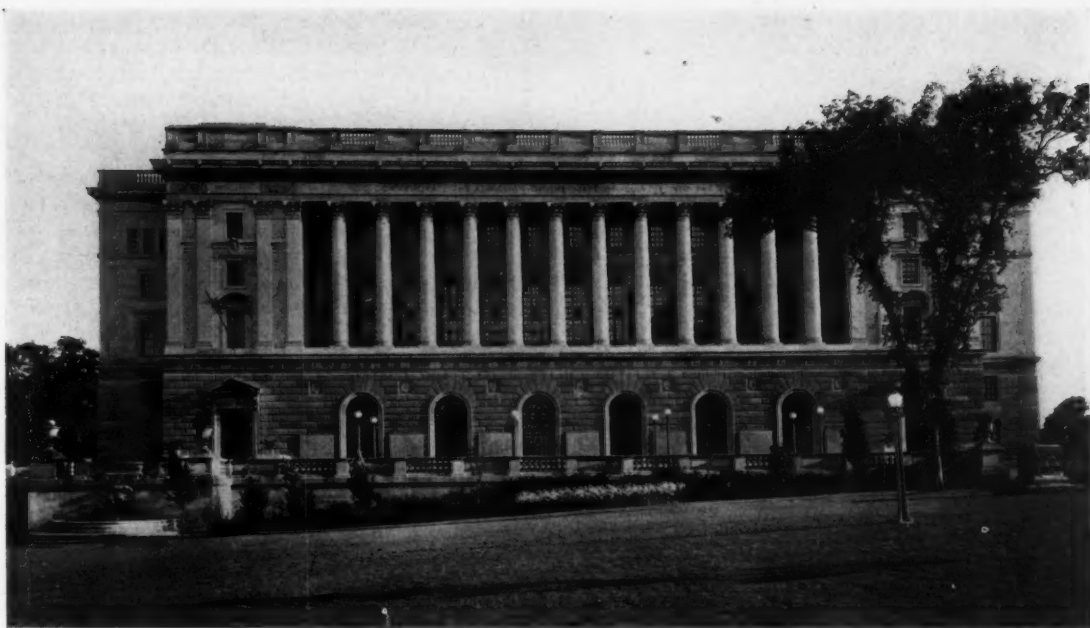
In careful hands, however, stucco can be run to the ground as in this Italian type of architecture, where the construction was sacrificed to assist the design; it was overcome by mopping the cement wall with a prepared waterproofing compound to prevent capillary attraction, and by inserting a projecting sill of thoroughly painted wood set on waterproofed building paper, upon which the stucco was stopped 2 inches above the grade line.

The elimination of the wood sheathing in the back-plastered method here employed calls for consideration of insulation which has been a subject of thermal conductivity tests at Armour Institute for various kinds of walls. Following these tests, felt secured to the inside faces of the studs and belled into the hollow spaces between them was used, with the result that even when the heat in the house is shut off for the night and the thermometer registers zero outside, the house temperature loss over night is said to be only about eight degrees, showing exceptional insulative efficiency.

As an example of modern scientific construction advocated by far-sighted committees and institutions, which utilizes these methods of protection from fire and weather, lacking in the average wood-framed residence, this house is a definite step ahead in the development of protective and preservative architecture. The findings of our investigational committees need not be discarded as theoretical or impractical for architectural use when they can be carried out in such a manner as illustrated here.



View of Combination Living and Dining Room



The Centennial Memorial Building, Springfield, Illinois

By HUGH M. G. GARDEN

TO plausibly predict the ultimate future growth of the buildings that will be required to house the governmental machinery of any one of the great states of the Union requires a considerable degree of foresight. Fifty years ago, when the present capitol building at Springfield was erected, the citizens of Illinois looking aloft at its imposing dimensions and ambitious pretensions may reasonably have felt that at last they were through with at least one great task. Yet so inadequate has it proved in the face of the growth of the state and the functions of the state government that one by one important departments have been forced out of the central building, and surrounding property has been acquired to provide sites for inevitable future expansion. The Supreme Court, is now housed in a building of its own on an adjacent

corner which is related to the capitol by proximity rather than by architectural treatment. The State Museum is located in an armory converted to its uses, but also unrelated to the central structure. Later it was realized that these were but makeshifts,

and the holdings of the state about the capitol were increased to their present dimensions, about eight city blocks, providing sites for at least four large departmental buildings surrounding the capitol, each considerably larger in ground area than the present central structure.

The Centennial Memorial Building, which commemorates the one hundredth anniversary of the admission of the State of Illinois to the Union, forms the central unit of one of these future structures and when completed will form a structure about 300 feet square built around a court, the portion at present completed form-



Grilles Forming Interior Vestibule



View of Terrace and Entrances

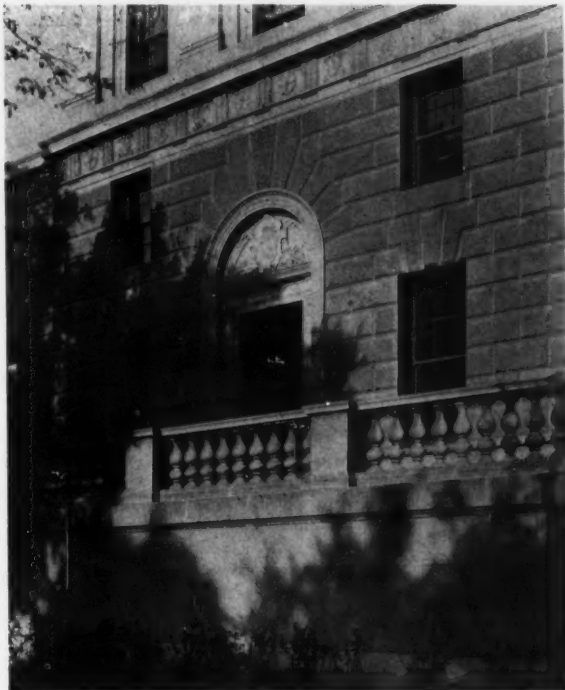
ing one side of this square. In planning the Centennial Memorial Building a suggested arrangement was made for the location and form of these future structures comprising the capitol group and at the same time a suggested arrangement in the city plan of Springfield for the principal units of a monumental character including the civic center, the linking up of existing parks and Lincoln's tomb with the civic and state centers. No radical changes from existing street and boulevard plans are included in these suggestions other than the grouping of the two railroad ways that now traverse the city into one. This arrangement if adopted will eliminate the unsightly embankment and bridges that now cut squarely across the west front of the capitol within a city block of the capitol grounds and which now utterly destroy any possibility of making the approach to the capitol from the present center of the city adequate and beautiful. With the removal of this railway and the erection of a building balancing the present Supreme Court structure this approach will be vastly improved and the Supreme Court linked up with the capitol group. The Centennial Memorial flanks the capitol to the south and closes one side of the forecourt. This ground, falling gradually from the capitol to the border-



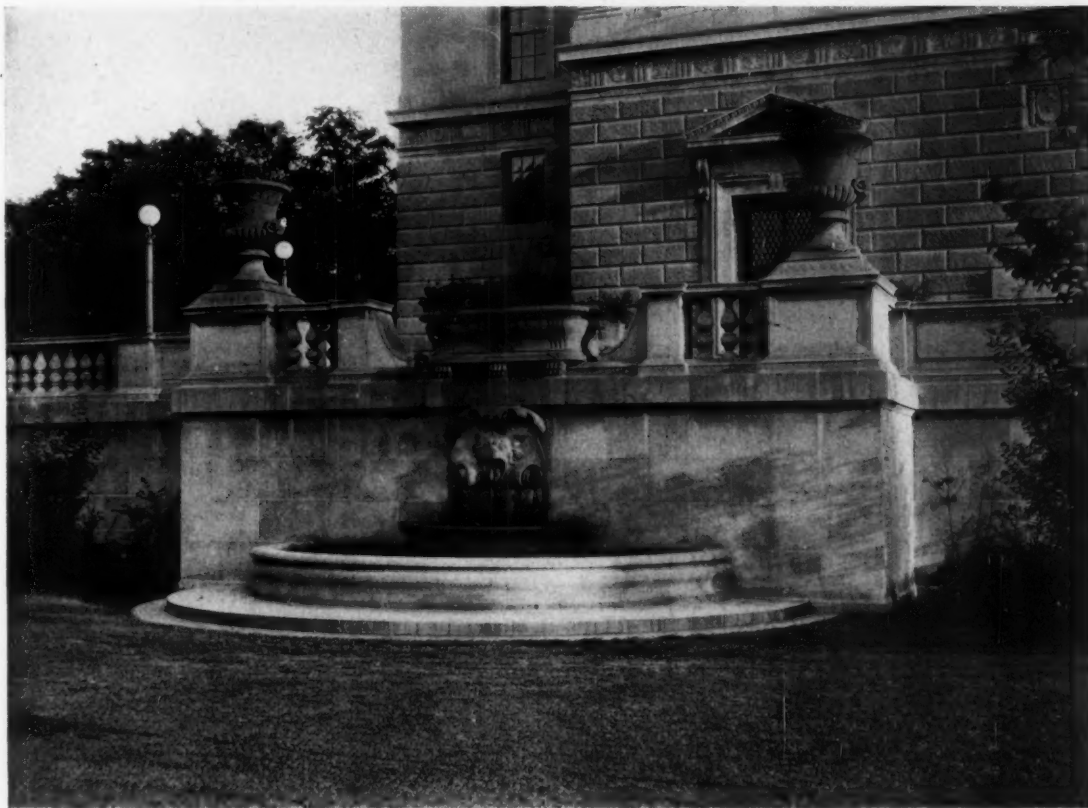
General View, Showing Approach to One of the Main Entrances

ing street to the east, naturally involved the creation of a stylobate upon which to erect the Centennial Memorial. This arrangement was expanded to include a balustraded terrace across the front of the Centennial Memorial 55 feet wide and about 320 feet long, the steps leading up to this terrace forming the terminal of the next street to the south from Capitol Avenue, the axial approach from the east. This terrace forms an effective approach to the building and an excellent vantage point from which to view the capitol and its environs.

The Centennial Building houses Memorial Hall, a colonnade stretching across the main front on the first story, in which the historical treasures of the state are preserved and displayed. This hall is terminated at each end by the two entrance lobbies, which are practically extensions of it. In a similar position on the second story are the State Library and the State Historical Library, two separate departments but housed in a single vaulted chamber, the separation accomplished by the introduction of a screen and doors across the center. The book room for these two libraries occupies the entire center of the building from the basement up to the third floor and is expected to provide for an ultimate capacity of about a million volumes.



View of the End Terrace



Fountain Placed Against Retaining Wall of Terrace

The third main division of the building is the State Museum which occupies the third story. This department will some time be housed, as it should be, in a building devoted only to its purposes. In the second story there is also located the Lincoln Memorial Room, in which are housed personal relics and documents of Abraham Lincoln. On the first story, projecting to the south in what will eventually be the lower part of the court, is a small assembly hall. In addition to these principal departments of the building there are housed a number of offices and minor departments of the state government.

The base of the building is of gray granite, above which the walls are of Indiana limestone. The interior of the entrance lobbies, Memorial Hall, and the adjoining corridors are faced with travertine, with ceilings gilded and polychromed. The flag cases of Memorial Hall are of bronze, and the protecting grilles and gates are of wrought iron. The



End of Reading Room, Historical Library

walls and vault of the Library Reading Room above the walnut bookcases are of texture plaster colored a warm gray, with marble steps and arches at the two entrances.

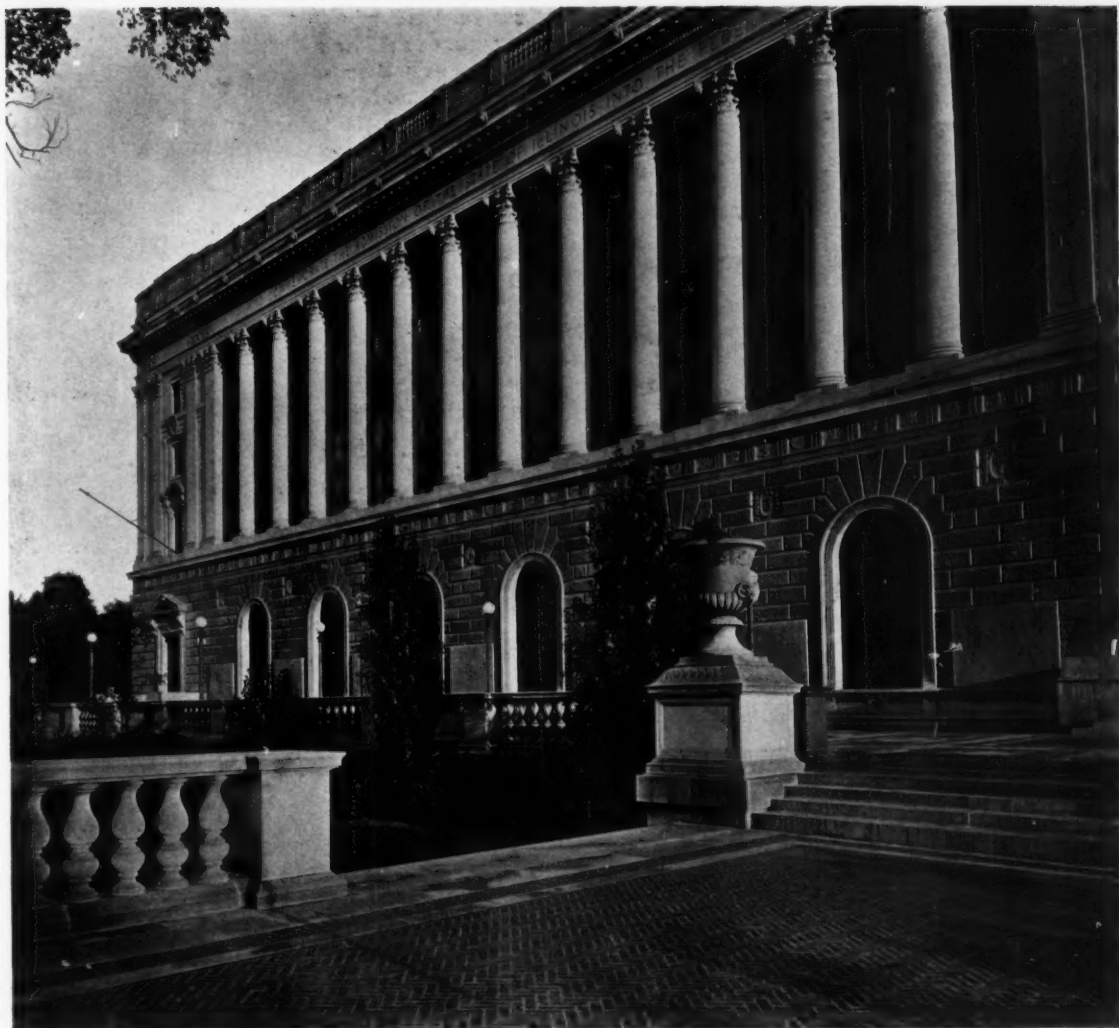
The Lincoln Room is paneled and painted ivory, and is designed in a manner intended to reproduce as nearly as was possible the atmosphere of the more important mansions of central Illinois in Lincoln's time. The decorations on both interior and exterior include escutcheons, emblems and names illustrious in the history of the state, of the territory, and of that larger land once known as the country of the Illinois in the

days of the Indian and the French *voyageur*, trapper and missionary, subjects full of romantic interest.

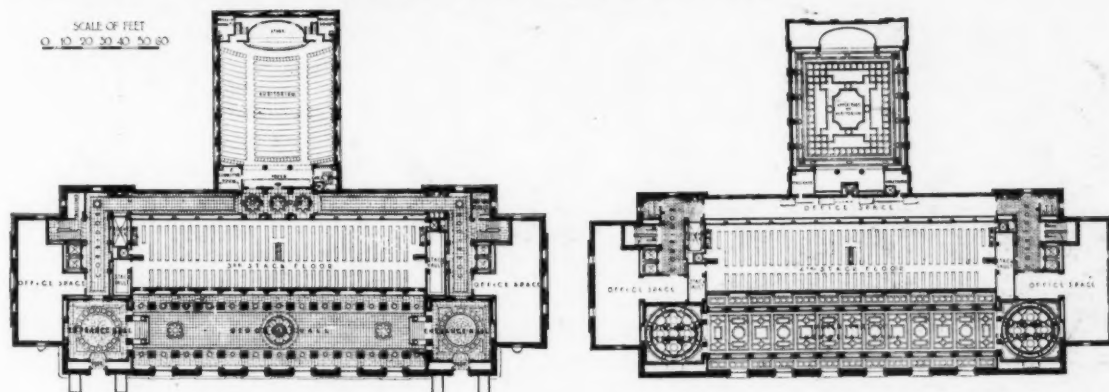
The principal sculptural decorations of the building are yet to be added. These are to consist of bronze groups flanking each of the main entrances and a series of seven large relief panels occupying the wall spaces between the arches of the first story.



View From Terrace Over Grounds of Centennial Memorial Building



GENERAL VIEW OF BUILDING FROM APPROACH

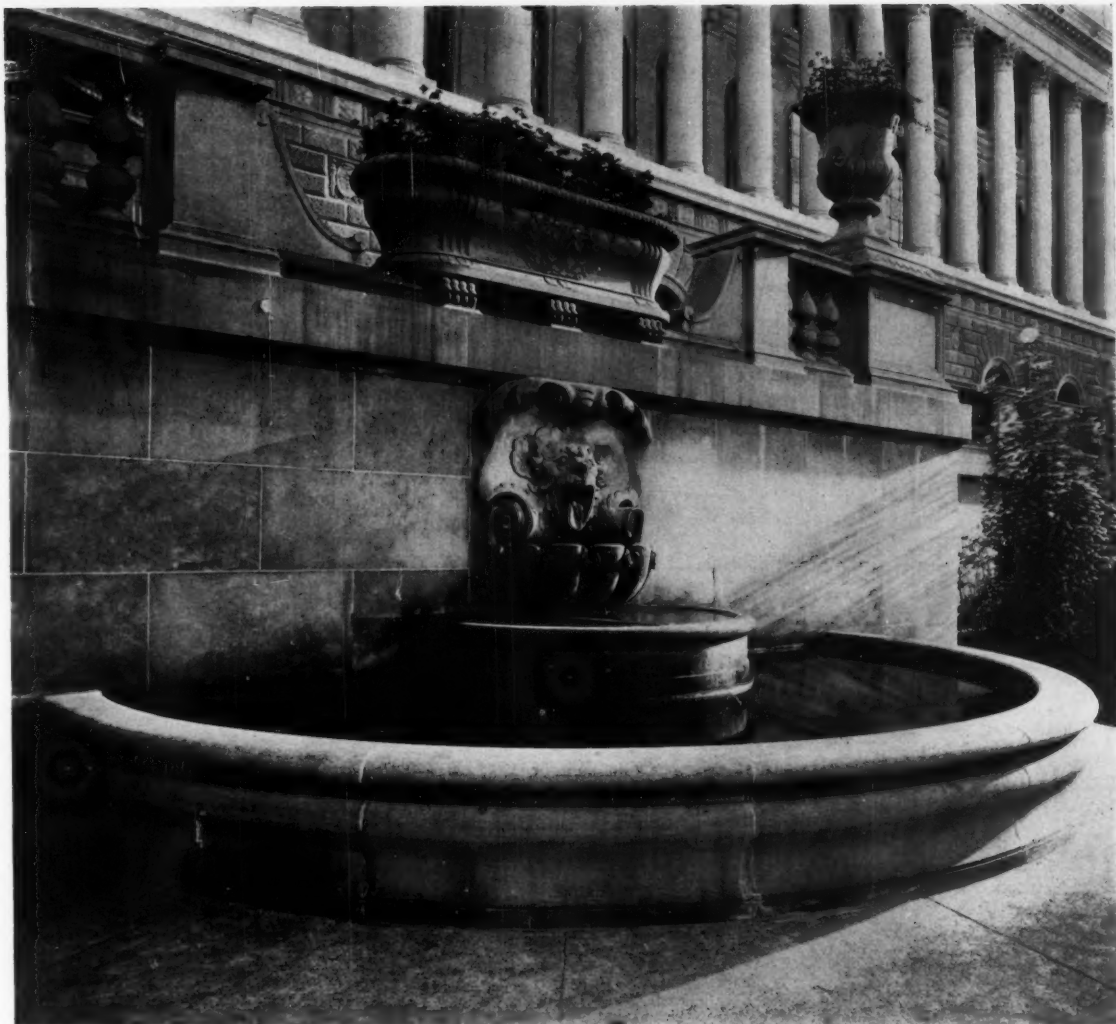


FIRST FLOOR PLAN

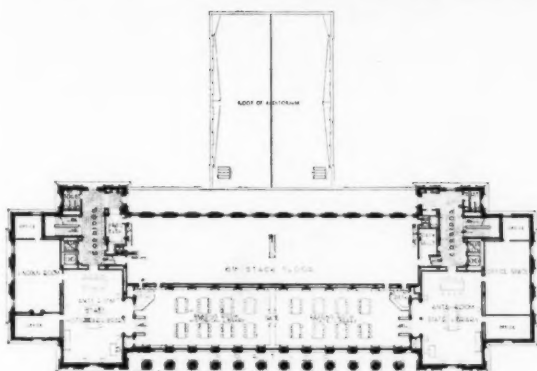
SECOND FLOOR PLAN

✓ CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.
 RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT

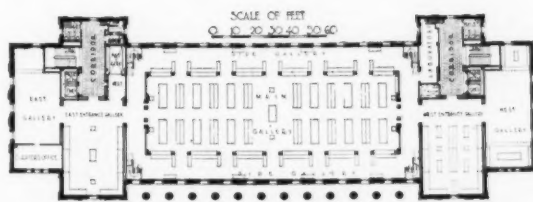
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✓ A FOUNTAIN AGAINST THE TERRACE RETAINING WALL



THIRD FLOOR PLAN

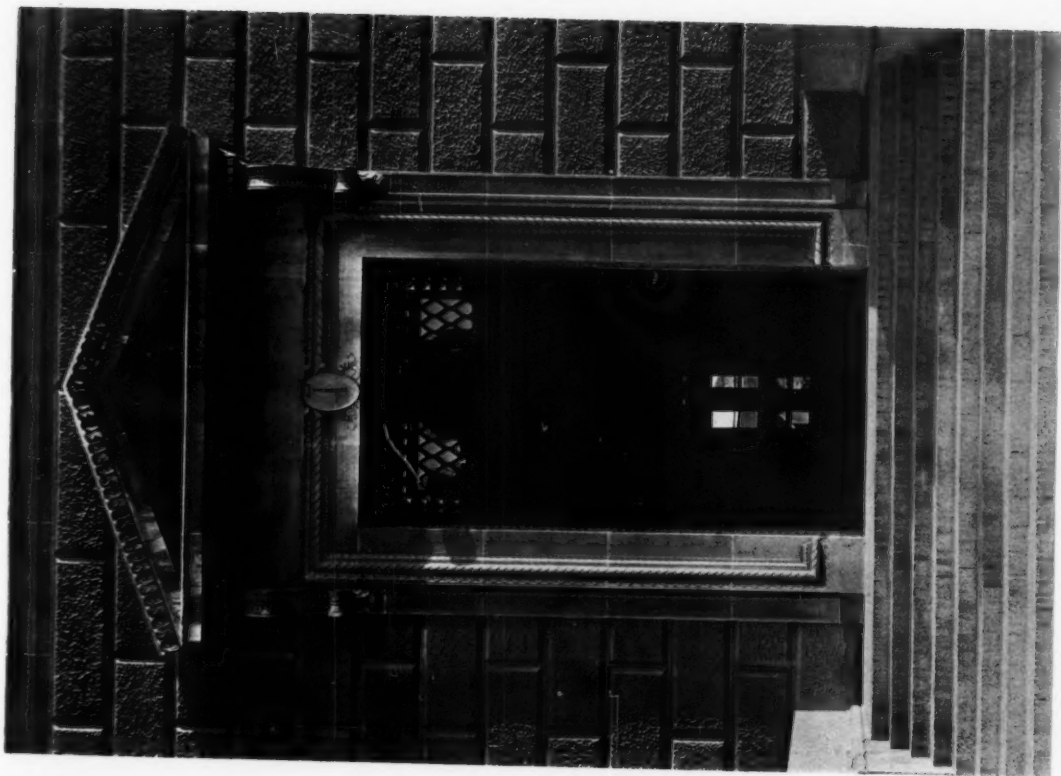


FIFTH FLOOR PLAN

CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.

RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT

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ONE OF THE PRINCIPAL ENTRANCES
CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.
RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT



WINDOWS OF MAIN FLOOR, FACING TERRACE

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LOOKING INTO THE GRAND ARMY ROOM
CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.
RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT

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FROM GRAND ARMY ROOM, LOOKING INTO ENTRANCE HALL
CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.
RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT

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ANTE ROOM AND READING ROOM



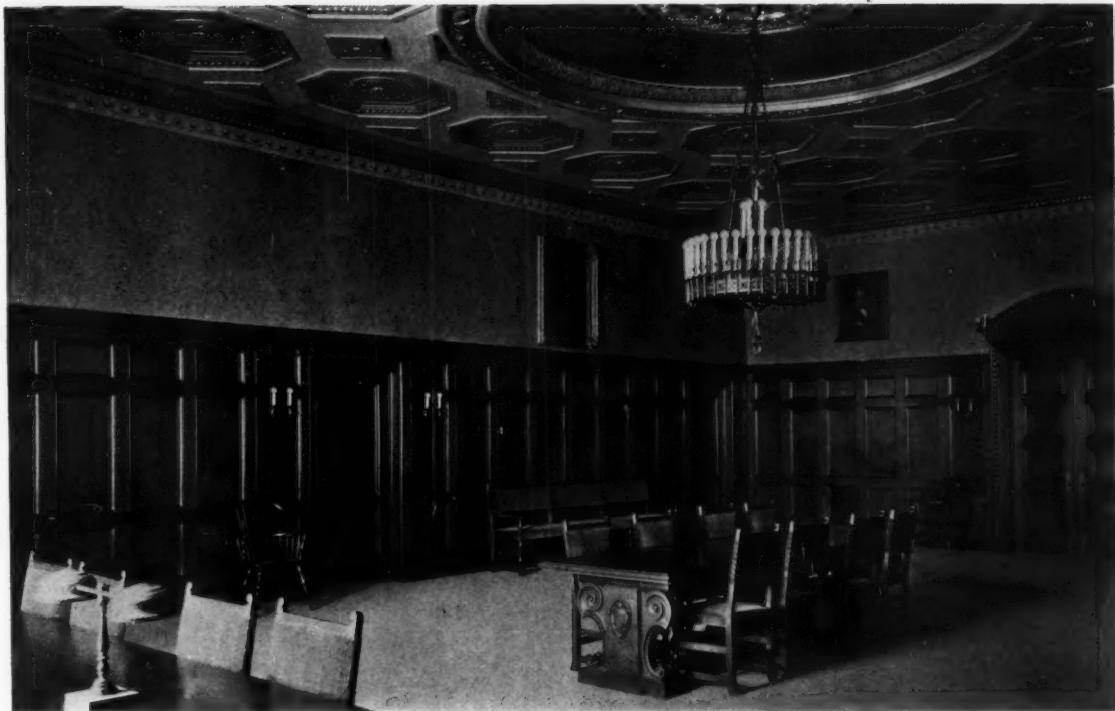
GRAND ARMY ROOM

CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.

RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT

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ANTE ROOM, ILLINOIS STATE HISTORICAL LIBRARY



THE MUSEUM AS SEEN FROM ONE END

CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.

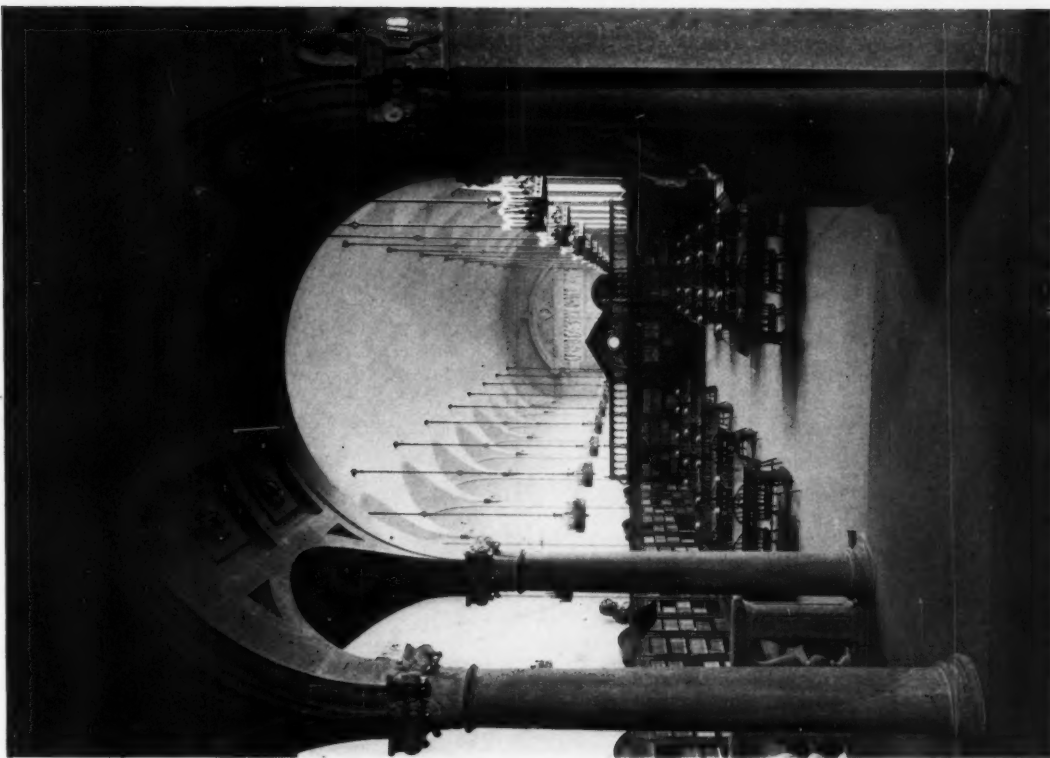
RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT

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ENTRANCE, READING ROOM, HISTORICAL LIBRARY



READING ROOM, HISTORICAL LIBRARY, FROM ENTRANCE

CENTENNIAL MEMORIAL BUILDING, SPRINGFIELD, ILL.

RICHARD E. SCHMIDT & HUGH M. G. GARDEN, ARCHITECTS; EDGAR MARTIN, SUPERVISING ARCHITECT

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BUSINESS & FINANCE

C. Stanley Taylor, *Editor*

Salesmanship in Architectural Practice

By HOWELL TAYLOR

IT is probable that there have been few successful architects who were not also good salesmen. They may never have analyzed the elements of their success, but they have had to be good salesmen because the successful practice of architecture is inseparably linked to an understanding of the principles of salesmanship.

This is an inevitable fact because the architect is constantly exercising creative genius, the results of which must be "sold" to others. That he is asked by his clients to pass judgment on various ideas which they present implies that they have been impressed previously with the value of his creative ability. In spite of the fact that the larger part of the architect's actual practice is judicial and demands the use of specialized knowledge for the solution of others' problems (thus becoming a professional service), his inherent interest lies in the fields of creative effort, and his role is that of originator and salesman of architectural projects.

It is in an architect's province to think in terms of great projects,—of beautiful buildings properly placed, of real estate and park developments which will enhance the beauty and improve the living conditions of cities and suburban communities. It comes as naturally to him as painting does to the painter. It is his mode of expressing himself. He must do it. He thinks in three dimensions, and his colors are bricks, stone and mortar. Perhaps it is his misfortune that the practical elements of carrying out his pictures are so expensive and involve so many more problems than do other arts. Perhaps it is his greatest privilege that this is so, because it makes his art so much more human and involves the activity of so many people who must come under his influence as directing executive. Just as soon, however, as an architect undertakes to paint his pictures—to make them realities—he is compelled to accept the existing methods of architectural "painting" and *all* of the problems these methods involve as well.

Just as a painter must know the technique of mixing paint, the chemical content of various kinds of colors and their action on each other, just so should the architect be willing to study the intricacies of the human relations involved in building; just so must he know the means by which he can convince others of the value of his projects and keep them working harmoniously to accomplish the end which

is sought. It is as much an architect's business to know how to promote and finance a project, and to consider actively the means of doing this, as it is for him to know how to produce an efficient floor plan or to use mosaic tile intelligently. If he has the vision to conceive the project, why should he hand over its execution to others who cannot carry out his ideas as intelligently as he himself could? He should be determined to know as much about the material elements of his practice as the painter knows about his. Is not the promotion of splendid architectural projects—creative salesmanship—a part of using the colors? The architect who conceives a scheme for improving, beautifying or making more efficient some element of city planning or housing should be prepared and should expect to be compelled to "sell" his idea to the people who are the logical customers. If his projects can never get beyond the drawing stage without the assistance of numerous other agencies, he is not an architect but a draftsman.

Take, for instance, the building of Adelphi Terrace in London by the Adam brothers,—a good example of promotional activity by architects of international repute. In this connection it is interesting to note that one of the Adams is thought to have been a banker as well as an architect. The world has profited immeasurably through the creative salesmanship of inventive genius, for every invention has had to be "sold" to someone; in fact the creation of a market for a new article of any kind is confronted with the same problems of selling. What would have happened had Fulton and Livingston waited for some shipping concern to commission them to design a steamship?

Fundamentals in Salesmanship

"Salesmanship, in its broadest sense, is essentially the selling of one's point of view. . . . When one individual endeavors to influence another to adopt a certain mental attitude or to act in a certain way, he is practicing salesmanship. Everyone can profit by a knowledge of the principles of salesmanship and of successful selling methods, using the terms in this broad sense.

"Everyone, at one time or another, sells his services. If we can present our qualifications in such a way as to convince the other fellow, we shall sell our services more surely, and possibly at a higher

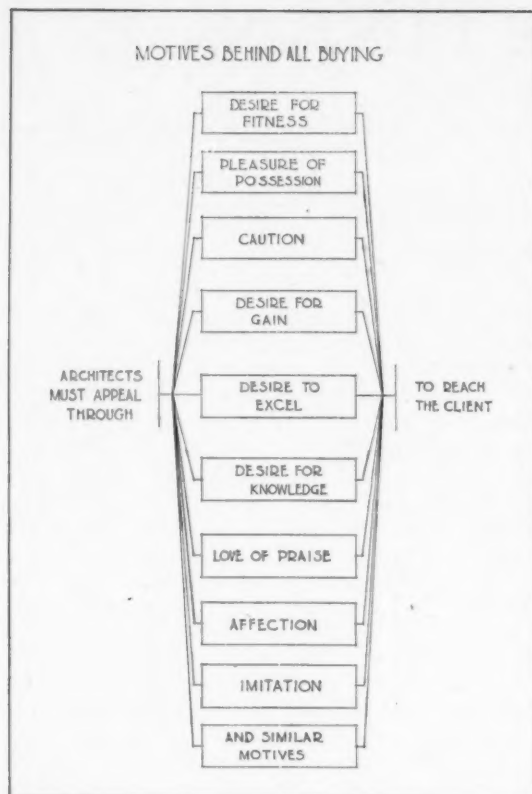


Fig. 1. Motives Involved in Appeal to Client

figure, than if we are uncertain in our methods. The accountant who would become a general auditor would do well to study salesmanship before presenting his proposition. . . . The shop superintendent who desires improved equipment in his plant must 'sell' the board of directors. The corporation treasurer, when he goes to borrow funds, must 'sell' the bank on his proposition. . . . Every man, then, has a vital interest in that knowledge of the human mind and that practice of persuasion in which lies the essence of salesmanship, for it enters into almost all human relations.*

It must be clearly borne in mind, however, that true salesmanship is not coercive or hypnotic. It is merely the logical appeal to the buyer's reason to accept the point of view of the seller.

A study of salesmanship is not only necessary to the architect in selling his own services, but he finds himself constantly confronted with the problem of persuading a client to accept some suggestion in direct opposition to the client's stated desires. The same principles of salesmanship must be used in selling an architectural idea to the client as the salesman in the retail mercantile establishment employs. It is quite possible that these principles must be applied considerably harder in the case of the architect than in that of the retail salesman, and the

use of much greater tact and persuasion may be required, for the architect's problem is more difficult.

Too many practitioners in artistic fields have hidden under the guise of temperament their indolence in the practice of business courtesy and their distaste for any failure on the part of clients and others to understand and accept new ideas. This unfortunate point of view (for it cannot be considered an inherent characteristic of the artist) has given members of the artistic professions the reputation of having no appreciation of business economy,—a belief as pernicious as it is fallacious. It is the duty of architects to help correct this false estimate, and a study of salesmanship will help them to do it, because the process of becoming a salesman demands a point of view which permits a complete forgetting of self and lets the architect stand in the shoes of his client. He must ask himself: "Just what am I trying to sell this man? What will it do for him when he gets it? What would I like to have him tell me if I were in his place?" The architect must talk his service, his project, from the "profit-to-you" angle. He must remember that the buyer is only interested in spending money for something which will be of evident benefit. "Behind every human action there is a motive." It is a part of good salesmanship to discover the motives of every buyer and to frame the selling arguments accordingly. If these can be carefully analyzed before a definite appeal is made, the architect will find he can anticipate the client's objections and make successful solicitations. Several of the motives which the architect must recognize are shown in the chart given as Fig. 1. Through them he must influence his client.

"The motive behind every purchase is the satisfaction of one or more instinctive desires. A merchant buys goods for resale to satisfy the money-making instinct; an automobile is bought because it gives pleasure by satisfying the instinctive desire for luxury and comfort, or because it appeals to the pride of possession, or perhaps because both instincts enter into the transaction."* No one can dispute the statement that the failure of many business and professional ventures is due not to lack of merit or ability, but because they are not intelligently presented and therefore lack appeal.

The "Mental Journey" of the Buyer

The conclusion from the foregoing, namely, that careful analysis of the buyer's thought is necessary for the successful culmination of any sale, suggests that some method must be determined by which the buyer logically may be led, throughout an interview or in a letter, to take the desired action. Long continued practice has shown that there are four distinct stages in a successful solicitation, all of which must be carefully considered and which must become the path of the prospect's "mental journey." These are in the order named, which is the logical order:

*"Salesmanship and Sales Management," by John G. Jones.

**"Principles of Salesmanship," by Harold Whitehead.

Attention,
Interest and
Desire
leading to
Action.

No matter what medium has been chosen for reaching the prospect, it is essential that certain arguments be specifically prepared to provide for this mental process. Whether the architect is preparing for a personal interview or a mail solicitation, the same condition holds, and a definite arrangement of arguments should be determined before the interview begins or the first letter is written, if the results desired are to be had.

Approaching the Prospective Client

Two important methods of approach should be studied by the architect: direct personal contact, and carefully written letters. Space is too limited here to consider the details of personal salesmanship, and they must be passed over, merely calling attention to the two texts already quoted. Both contain much practical information of value.

The well studied sales letter is one of the most important elements in the architect's solicitation, and should be given careful attention in presenting any project. It can be made the entering wedge for connections which might otherwise be impossible. It can pave the way for an interview where personal calls would be useless. It can be made a most faithful, business-getting friend, but it must be handled with the utmost tact and the principles of good salesmanship followed faithfully, if results are to be obtained. Every architect who wants to enlarge his practice should study the possibilities and power of letters. They will get to the very sanctums of the great and near-great and, if they are ingenious enough, will bring back the desired message.

Especially to the architect who is doing institutional work of any kind, there is an immense field

before him not only for locating prospective clients, but in making intelligent solicitation after they are found. If an architect has two or three buildings of one kind to his credit,—banks, hospitals, hotels or schools, for instance,—he has acquired valuable knowledge which can be capitalized to obtain more commissions of the same kind through carefully prepared letters. An architect who uses letters extensively told me recently that he gets replies from 75 per cent of the prospects to whom he writes, that he is able to keep in touch with the larger portion of his field in this way, and that he gets definite information on many new projects. Fig. 2 makes an interesting generalization.

The structure of the letter which brings results should be given the most careful study, and extreme patience must be exercised in carrying on letter campaigns. One cannot afford to be discouraged if no answers are received after the first or second letter, for it would be like giving up golf after the first nine holes. If letters are not successful, they should be rewritten. Two letters, or three or four, may only succeed in starting a prospect's thought.

The "you" element should be stressed, as in all selling argument. This idea is clearly shown in this excerpt from a volume on business correspondence published by the A. W. Shaw Company: "The old school of correspondents—and there are many graduates still in business—write solely from their own viewpoint. Their letters are focused on 'our goods,' 'our interests' and 'our profits.' The new school of letter writers focus on the viewpoint of the reader, find the subjects in which he is interested, learn the arguments that appeal to him, bear down on the persuasion that will induce him to act at once."

In Fig. 3 a typical case illustrates the application of the necessary sequence of selling arguments intended to get definite information from the prospect regarding the status of a proposed building, and probably an expression of interest in the service. It

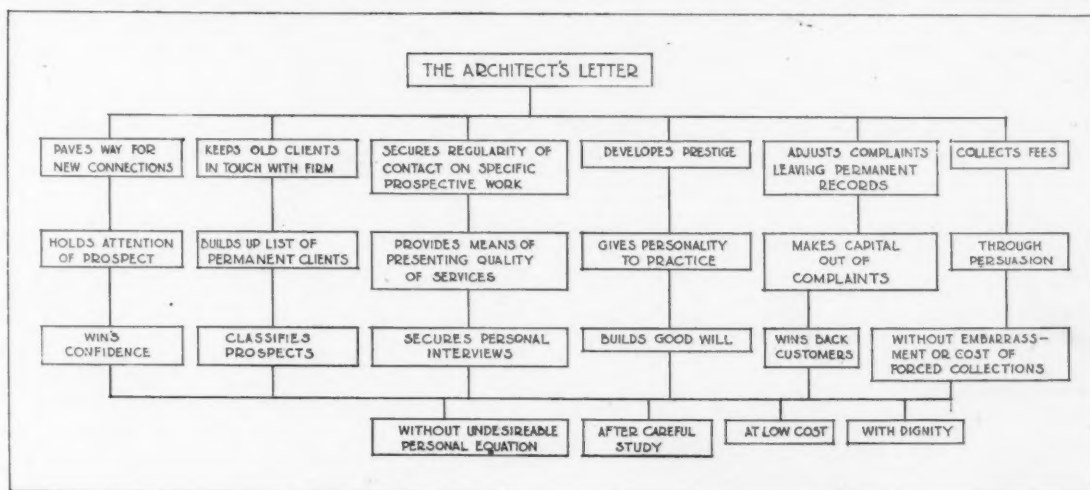


Fig. 2. Diagram Showing Service Rendered by an Architect's Letter

William A. Frye, Esquire
1134 Dime Bank Building
Dochester, New York

Dear Sir:

In a conversation with Mr. Henry James this morning he mentioned your connection with the proposed new Racquet Club, and called our attention to the similarity between the site you have selected and that of an athletic club which we have just completed in Cleveland.

*Attention and interest.**

You will be interested in several distinctive features of this Cleveland building, and we would like to go over the plans with you; at the same time describing our method of handling the project, for we would like to obtain your commission if no architect has been selected.

Description and explanation.

There may be many other worth-while plans in our files to consider as well, for our experience has been gained largely in designing clubs, hotels and hospitals. Over a period of 11 years we have been developing our organization to render a complete architectural service in these fields.

Proof and persuasion.

A comparative schedule of rentals and operating costs for several club buildings would be valuable to your committee in studying the financial aspects of the problem. Such a schedule we can prepare quickly from our files and shall be glad to do this without obligation to you.

Inducement.

If you will advise us about the present status of the project and set a time when we may talk over its preliminary features, we shall make up the schedule at once and collect other data of interest for the conference.

Closing climax to get action.

Yours very truly,
BRAMANTE and ADAM,
By H. T.

HT/CT

** Note—Underlying purpose of each paragraph indicated in italics.*

Fig. 3. Suggested Draft of Architects' Letter to Prospective Client

is well to note the slight variation in the mental stages from that just mentioned. For sales letters they are:

Attention and Interest;
Description and Explanation;
Proof;
Persuasion;
Inducement;
Closing Climax to get Action.

This discussion cannot in any way be considered more than the briefest statement of sales principles suitable for the architect's use. It is by no means a finished group of ideas obtained through long

practical experience. Rather is it a rough analysis of wide fields toward which the coöperative research of an active and thoughtful profession should be energetically directed. The salesman of today creates business for his product. If he waited for a buyer to sense a need, seek out or invent the article he wanted, there would be few great manufactures. Most of the work done would be specialized hand labor. It took much creative salesmanship to bring the world to the point of commercial expansion that has been attained today. The study of salesmanship by architects can make the profession a more effective element in daily life, to the profession's benefit.

Farmhouses Near the Riviera

By WILLIAM D. FOSTER

THAT part of the Riviera from Cannes to Menton is probably as well known to English and American tourists as any one section of the world. And well it may be, for anyone wishing to escape from the cold and snow of our northern states or from the drizzly dreariness of an English winter has only to go to the coast of southeastern France to bask in the sunshine of a climate where rain is little known and where only the nights are really cold. This tourist-Riviera stretches itself along the coast like an indolent person lying on a beach, safe in the assurance that it is protected from the cold winds of the north by the mountains. These Maritime Alps come down to the coast in great barren ridges, but as they lower themselves the cold gray of their stony peaks is graded off by terraced olive groves into the fine, fertile fields which they enfold, and where one finds farmlands and orchards basking in the Mediterranean sun.

However, most of the peasants in this section remain grouped in towns and villages, as they have for so many years, and go out from there to their little patches of land which they cultivate so intensely. Here in these little gardens they may erect small houses for their tools, for drying their fruit or storing their vegetables and for protection for themselves against the weather, but at dusk they return to their homes in the towns.

This living in towns is a quite natural consequence of the history of the region, where for centuries it was necessary for people to protect themselves against attacks and to repel invasions. It is a country which has been the fighting ground of warring factions of Europe from time immemorial. After the fighting which we may presume took place between the cave men and the various savage tribes, history tells us of the invading Romans who conquered southern Gaul; of the Saracens who drove out the

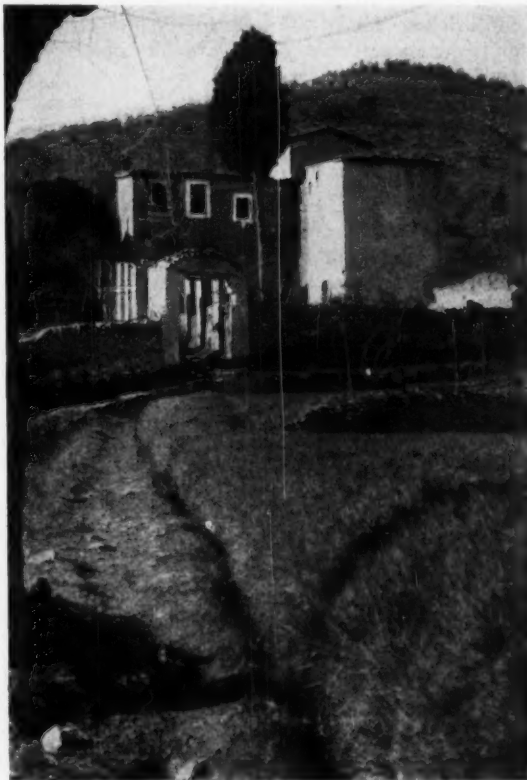
Romans; of the wars between the Lombards and the Saracens, and further of the struggles between the Guelphs and the Ghibellines, when counts of France and counts of Italy alternately held this or that town, until finally in 1859 Italy ceded to Napoleon III Savoy and the towns along the Riviera, except for Monaco, which had already placed herself under a French protectorate. So it was that, until comparatively recently, it was necessary in this territory for the people to live in towns, going out during the day to their farmlands. Today they still hold to their communities in great part, and the big farmhouse or farm group is not often found. Old customs are clung to tenaciously.

Those that we do find are quite Italian in character, and for various reasons. Most of them were built while the country was still under the control of Italian lords; but even if built today they would be under the same influence, for the population is almost as Italian as it is French, more mixed probably than it is at most borders, although it is never possible to see any quick or absolute change in character and custom at frontiers, for peoples mix in

spite of governments. This mingling of nationalities as shown in the architecture is similar to the *patois* which is spoken here, a dialect which one writer has described as "French rubbed with garlic." In the case of the architecture, I feel that it is more nearly Italian, touched slightly with perfume.

Climatic conditions are also a determining factor in architectural development, and climate like customs has little regard for the imaginary lines indicated on maps by victorious kings or by peace conferences. So here we have the same flat-sloped roof of red or yellow tiles, the same stucco wall surfaces, and the rather small window openings as in Italy.

While the hills around here are filled with stone, it doesn't seem to



A Small Italian Farmhouse Near Sospel



Old House in Olive Grove
Not far from Peille



"House with Olive Oil Mill"
Near Villeneuve-Loubet

be a stone that is very good for quarrying, so that we find very little cut stone used in the buildings. The walls are generally laid up in a pretty rough fashion with the rounded rocks set in the mortar and with pieces of old tiles and bricks filling in the spaces; a great deal of mortar is generally used, so that the result somewhat resembles a concrete mixture. These walls are then stuccoed or, as in some cases, left with only a little pointing up so that the stones and bricks show in spots. In a few cases where the stone surfaces have been left uncovered the stones seem to have been laid with greater care on the outside, but seldom has the stone been cut or trimmed. Practically always where a vault occurs or where an arch has been used, the form has been made with bricks instead of with stones.

Mounting up between two high ridges back of Monte Carlo is a valley which is cut at right angles by another ridge so that this north and south valley

green in spots, everything toned with the beauty of age.

A small house at the entrance to the "Golf Hotel"—so-called because it has a golf course which is one of the two that can be reached easily from Monte Carlo—is now used for service at one end and as a barn at the other. So far as one can tell it might be a small house set in the foothills of California.

In this same general district, but farther up on the hills near the town of Peille and in middle of a terraced olive grove, is the little house with a balcony at the second floor level. It is only a very simple peasant's home, but it is interesting as well for being near Peille, a small town where Americans will be likely to find themselves exceptionally well treated. And when they wonder just why, they will find the probable answer on a tablet which marks a certain rather small, rough road as the "Avenue Mary Garden." It seems that this honorary citizenship of Peille had visited the town on



"Le Columbier" at Cagnes



Old Mill at Cagnes-sur-Mer

is divided into an upper and lower *terrain*. The lower is rather barren, but the upper is very fertile, and there lies the town of Sospel, a small town with a long history; around it is farmland and a number of farmhouses. All of those shown here are within a comparatively short distance from Sospel and are quite typical of this whole valley. They are all covered with light, almost white, stucco except for one where the gray stone shows through what probably was once a complete coat of plaster. The roofs are covered with simple round tiles, once light red, but now covered with moss so that they are brown and pale

several occasions and had found it so interesting that she contributed a considerable sum towards the erection of a war memorial.

Quite to the west of this district and between Nice and Cannes is the town of Villeneuve-Loubet, a mediæval stronghold which was the scene of various historical events and for years the residence of the powerful Villeneuves who ruled over this and many of the neighboring towns. This district also is quite rich in both farmlands and forests.

It is near the town that we find the rather dignified facade of the house which is part of the old olive oil mill, a mill that is running today for the same purpose it has run for so many years. Not much farther along the same road is a fine old farm building which one day must have been a real country seat, judging from its size and from the walled entrance courtyard which doesn't show in the photograph and which is now in decay and very dull. The arrangement of the roof on this building is particularly interesting. Another house which was probably once the residence of a great landowner is a long rambling affair now serving both as a "residence" for several families and as a saw-mill, the water power running in a stream through an archway under the house.

Also near Villeneuve-Loubet, but quite away from anything but a little used carriage road, is an abandoned farmhouse with its loggia on the upper floor. It is a question whether this open loggia was for the comfort of those who once lived in the house or whether it wasn't primarily used for drying fruit, as is the case today in so many country buildings where such loggias are used to catch the southern



Low, Spreading Buildings of Stucco, with Tile Roofs
Another view of mill at Cagnes-sur-Mer

sun on the figs and orange peels and to protect them from any rain. At any rate, it is an interesting motif which would make an admirable porch. The entrance gateway to its old courtyard is typical of the district, emphasized by being raised a little higher than the surrounding wall and covered with a little patch of tiling. The buildings on the other side of the court are quite uninteresting and quite changed from their original plan. The little covered porch, with its curious worn steps leading up from the street, is on the very edge of the town and peers over onto the newer highways so that its owners can sit and watch the trams and *char-a-bancs* as they pass on toward Grasse, carrying their sightseers to the perfume factories.

Another amusing entrance porch is that on the little house at Cagnes called *Le Columbier*. The house only a few months ago was a ruined barn, but an enterprising and clever Frenchwoman, impressed with the steadily increasing number of American and English visitors coming to her town,



Doorway at Villeneuve-Loubet



A Relic of Better Days

bought it, remodeled it in a simple way without losing any of the character of the old places of the district, and rented it before it was finished! The anomaly of a modern electric light over the archway and the use of a defunct iron bed for a portion of the fence are not very successful, but they are characteristic of the country round about.

The other house at Cagnes is in the lower part of the town, near the tramway, and where it is gradually being surrounded by the newer business buildings. It too was once an old olive oil mill, and the new owner of the buildings offered to sell me the old wooden presses, long ago supplanted by more modern affairs, with the comment that I could probably sell them to some museum as authentic mediaeval instruments of torture. I did not buy them, however, as they seemed rather bulky.

There is very little real elegance to be found in these buildings back of the Riviera, for this is truly peasants' country. Also, when a Frenchman de-



Dominican Brothers' Home
Near Sospel

cides today that he wants to live in the country, he seldom is satisfied to take an old place and restore it properly; he prefers to build himself a real "villa," always a terrible affair and quite modern indeed. So, even when one does find a fine building such as the farmhouse near Villeneuve-Loubet, its former elegance is largely lost in the squalid conditions existing under the present peasant rule.

Old farmhouses near the line which divides Italy from France are likely to contain many a treasure, particularly where, as often happens, the house has been the home of several generations of the same family. Particularly interesting is the furniture with which

these old houses are sometimes filled, showing as it does influences both French and Italian and often quite defying classification. Interesting, too, are the peasant versions of ironwork, pottery, lace, embroidery and all the other forms of handicraft in which the workers made use of motifs inherited from family tradition quite as often as those in fashion at the time.



An Old Farmhouse with Its Barnyard



Model Tenements for Wage Earners at Bayonne, N. J.

ANDREW J. THOMAS, Architect

THAT the housing of the lower paid wage earner must be undertaken as a public service remains equally true whether financed and carried out by municipal governments, as in England, or by industrial corporations or philanthropic institutions, as in this country. The tremendous increase in the population of large cities combined with the great change in economic conditions has completely altered the housing problem of 20 years ago. The need of combating congestion in certain sections of our large cities and manufacturing towns caused by the enormous growth of American industries is of ever increasing importance. Even in old housing, rents are rising until, in many cases, they equal those required to make new construction profitable, even at existing high building costs. To offset these high costs the architect, who is doing more than anyone else to relieve this situation, has brought greater economies into the design.

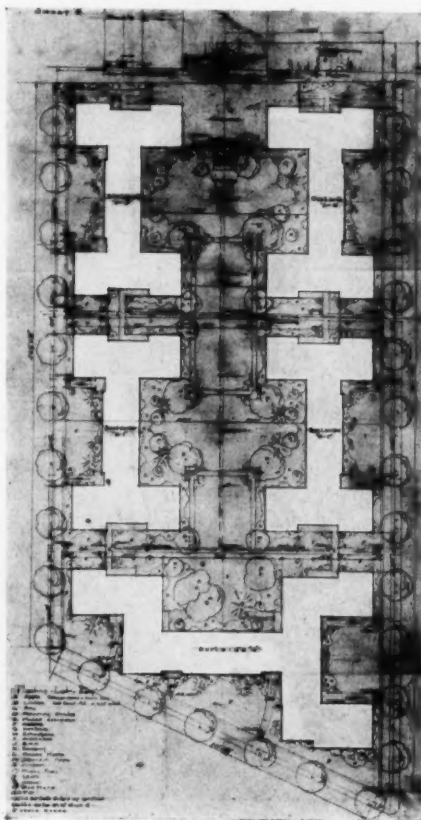
As living expenses have increased proportionately with daily wages, the wage earner of today is confronted with the serious problem of how to house himself. Under the old pioneer formula each man tried to provide his own individual housing as illustrated by the small one- and two-family houses of any manufacturing town built 50 years ago. As the cities grew, at the expense of the country,

the resulting and ever increasing congestion necessitated the housing of many families under one roof. This type of housing, although it produced the unhealthful and unsanitary tenements which are still the disgrace of our large cities, is more necessary than ever before. With the cost of land, labor and materials at top figures, rents within the means of the wage earner for housing in quarters healthful,

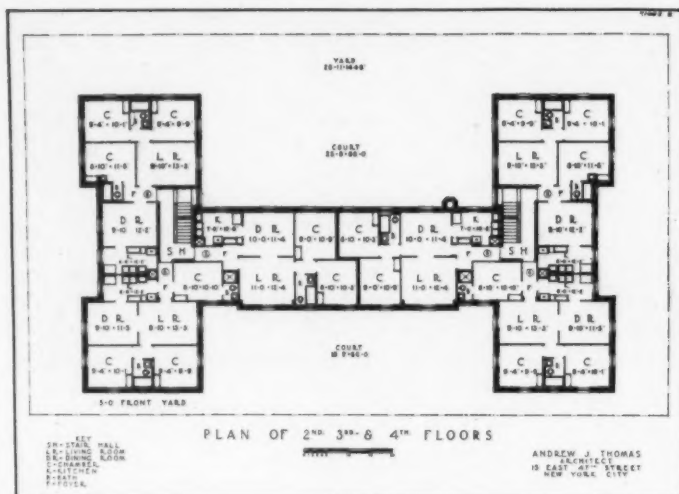
sanitary and equipped with modern conveniences, which every family requires for comfort and contentment, can be procured only by large scale production worked out on the most carefully considered economic and scientific principles.

It is indeed a public service of vast importance which is being undertaken in Bayonne, New Jersey, by a group composed of some of the largest industrial interests in the United States—oil refineries and manufacturing plants—together with several public spirited citizens. Coöperating under the leadership of the Bayonne Chamber of Commerce, they have an organization to demonstrate ideal wage earners' housing, which is known as the Bayonne Housing Corporation, with George R. Keenan as president and Andrew J. Thomas as architect and superintendent of construction.

After careful consideration of the two-family house, which is characteristic of the workers' housing in New



Plot Plan of Development



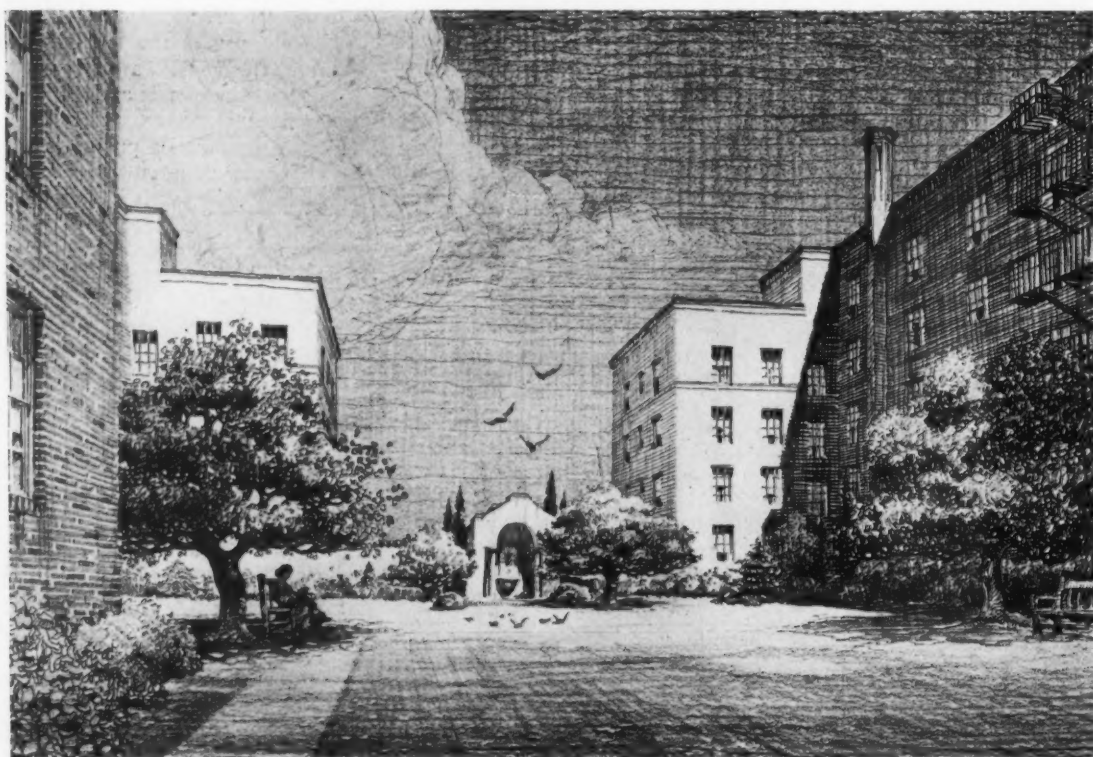
Plan of Typical Floors

Jersey cities, the Bayonne Housing Corporation adopted the apartment house as the most suitable type for Bayonne. Because of the lack of available land, brought about by the rapid growth of Bayonne, together with the high cost of construction as well as the high cost of operating separate houses, the adoption of the garden apartment type of housing,

which combines the advantages of the two-family house with the economy in construction costs of apartment housing, was determined upon. The two-family house is not practical from any economic viewpoint, because it is run by an amateur landlord for his neighbor, and because the cost of land per family, including street betterments, civic service, insurance, taxes and upkeep, is too high for wage earners. Such housing, where a maximum of light, air and space combined with common conveniences can be obtained at a minimum rent for the tenements and a minimum cost to the landlord, is being achieved today through the intelligent combination of the conveniences of a modern tenement with the surroundings of a model apartment, a solution of the housing problem approaching nearer to the ideal

than has ever before been arrived at.

In the opinion of Mr. Andrew J. Thomas, who is among the foremost authorities on such problems, this housing will provide the workingmen with a far better type of home than has been thought possible at present construction costs, and, more important still, one which can be rented at a price



View in Garden or Inner Court of Bayonne Development

within the means of the average wage earner. The sponsors of the project expect that it will bring a reasonable return on the investment, with no thought of any speculative profit nor philanthropic pose, and that it should not only influence the speculative builder to improve his product but should also have a far-reaching effect in bettering the living standards of industrial workingmen throughout the country. This aspect should appeal to labor in the building trades, since their hearty coöperation is necessary for the complete success of the undertaking, which will benefit labor more than any other class.

It is a great improvement on the old method of "company housing" in industrial developments, which superimposed the landlord-tenant relationship on the capital-labor situation and which also laid too great a burden on each single industry by tying up too much of its capital in housing. This leads to the dictum, more or less informally stated on the part of housing experts, that industry cannot well be expected to take a hand in solving housing problems except in special cases. This is the first time that several large industries and public spirited citizens have coöperated in a single housing operation. It should pave the way for countless more such combinations in all our industrial centers and large cities where the improper housing of the wage earner is a disgrace to our present social conditions. Such coöperative industrial ownership will forever do away with the evils of company ownership which lead to unjust evictions in time of strikes and discredited "company housing" throughout the ranks of organized labor. In a holding company composed of a group of manufacturers and individuals no single member is able to dictate to the management. A group is apt to be more just and reasonable in the handling of tenants, more careful and public spirited in the proper locating of its housing in regard to convenience to the factories and consideration of city planning, more educational in setting better standards of living, more careful in securing the right kind of tenement laws and proper inspection, and more active in discouraging irresponsible speculative housing.

In consequence of the amendment to the Tenement House Law of 1904 recently passed by the legislature of the State of New Jersey, it is now possible through low-cost construction, fireproof stairways, and adequate courtyards to give the wage earner healthful and safe housing at low rentals.



Children's Playground in Inner Court
Workingmen's Housing at Bayonne

This new law marks one more step in the steady development of the problem of better housing for the wage earner. It permits this particular housing project at Bayonne to be carried through successfully, so that without question other interests elsewhere will soon come forward to provide working men with decent homes at low rentals, because they can now do so in the expectation of getting a return on their investments.

Architecturally, the proposed group of buildings marks the highest achievement in industrial housing which is possible at low rentals. Even Mr. Thomas' design for the Metropolitan Life Insurance Company's model tenements in New York, which was hailed as setting a far finer standard of city housing than any previous example, has been improved upon by him in some respects in this Bayonne group, where openness and sunshine, circulation of air, gardens and lawns will make these wage earners at Bayonne as well situated as if they lived in the

luxurious garden apartments built by Mr. Thomas at Jackson Heights. Upon the site chosen for the group in Bayonne, which is a large plot of land covering nearly three-quarters of a city block and fronting on three streets not far from the factories, will be erected five apartment houses, including four H-plan units, housing 26 families each, and one odd-shaped unit designed to fit the end of block, housing 45 families and making a total of 149 apartments of five and six rooms each, with bathroom and shower bath for each family.

Although the Metropolitan Life Insurance housing development at Long Island City and Astoria used only 50 per cent of the occupied area for each typical unit, a saving will here be accomplished making this Bayonne design really cheaper, by reason of fewer stairs in each building and other economies, so that only 35 per cent of the area of the site will be built over, leaving open the other 65 per cent for a large interior garden, side lawns, and street forecourts and setbacks. This garden space, which is obtained by placing the four H-shaped units of the design in similar positions end to end, equi-distant from each of the streets which form the parallel boundaries of the site, is 340 feet long and 51 feet, 10 inches wide at its narrowest width and 104 feet wide at its greatest width, where the courts of the buildings open into it. These courts are 66 feet wide and only 26 feet, 2 inches deep, a great improvement on the usual tenement house court which has here disappeared through the evolution of the rear communal garden. Each building in the group stands free on a plot 100 feet by 144 feet, 8 inches, the 24 feet between the buildings making veritable lawns of these passageways into the gardens. The courts in front of the buildings, similar to those in the rear, are 66 feet wide by 19 feet, 3 inches deep, which added to a 5-foot setback from the building line will give ample opportunity for lawns and planting. The effect of the side lawns, in conjunction with the garden, will be to flood the houses with sunshine, and cause a flow of air all through the group—the principle of "block circulation," as Mr. Thomas calls it.

At one end of this interior garden is a playground for the smaller children, containing a comfort station and all sorts of apparatus for their entertain-



Model Showing Arrangement of Buildings

ment. Here a trained nurse or matron is in daily attendance who takes care of the children at a cost to the 150 or more families of three cents a day per family. This innovation in the development of modern housing recognizes a new condition in our cities, where the traffic of the streets is a constantly increasing menace to the lives of children whose only playground in many localities they are. To go to nearby playgrounds, if there are any, a mother can hardly trust her little children to cross the streets alone, nor can she always take the time from her family

and domestic work to conduct them there. Unless a special playground is provided within the housing block, the smaller children must remain indoors or play on the sidewalks, which means the street.

The rentals will include steam heat and hot water, which are usually either not provided in wage earners' housing or else are provided by the tenants themselves in two-family and in single houses, and are equal in value to at least \$2 a room per month.

The exterior is to be of brick, and the interior of frame construction, except for the stairs which, including the doors, are to be fireproof. Each building will be four stories in height on the wings and five stories in the center, making it possible for 18 apartments to have three or four exposures, and 8 to have two, with cross-circulation for all. The projecting wings and the difference in story heights will make an interesting outline which will be an improvement on the barrack-like, forbidding and monotonous aspect of the solid, unbroken facades, characteristic of streets in tenement districts throughout this country.

This openness of plan makes the individual homes extremely livable. Even the rear apartments, much like a private house, will jut out into the garden which, together with the side lawns and forecourts, will be planted with trees, shrubbery and flowers.

Notwithstanding all the discussion of the problem of low priced housing, little is being done at present if one excepts the project of the Metropolitan Life Insurance Company, so in this latest housing development, where all interests—capital, labor and public spirited citizens—are coöperating to provide the wage earner with a new standard of livable homes in which all modern improvements are had, Bayonne is setting an example for the entire country.

ITALIAN RENAISSANCE DETAILS

A SERIES OF MEASURED DRAWINGS

By CHARLES B. McGREW

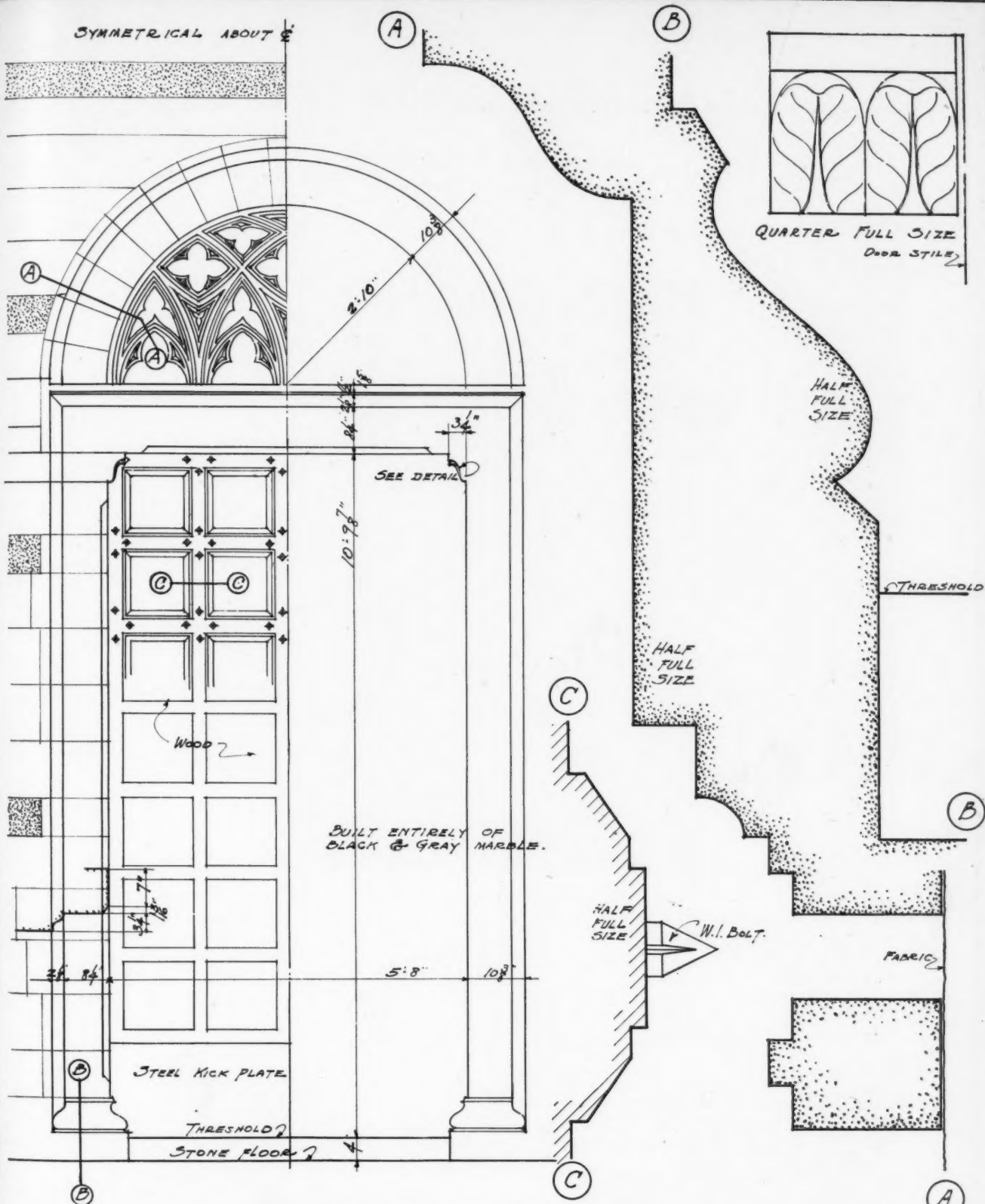


A FIFTEENTH CENTURY DOORWAY
FROM THE DUCAL PALACE, URBINO

RENAISSANCE ornament makes considerable use of the emblems of war, a custom which was a direct inheritance from the antique Roman period. This architrave of a doorway, for example, is ornamented with martial emblems upon its vertical members, while across the top appear the swags and cherubs' heads familiar in all types of Renaissance ornament, and above extends a frieze in which the dolphin motif is conspicuous, the entire doorway being crowned by a cornice which makes use of "egg and dart." The actual doors used within such an architrave are often masterpieces of inlaying in woods of different colors.

Work of this character naturally depends for architectural effect largely upon appropriate surroundings, and the beauty of its carving is greatly enhanced by the toning which comes with age and to which no photograph could do justice. The measured drawing of this doorway is the work of the fourth holder of the Plyn Traveling Scholarship in Architecture, University of Illinois.

SYMMETRICAL ABOUT C



DOORWAY • CATHEDRAL SIENA • ITALY

ONE HALF INCH EQUALS ONE FOOT •
• SCALE OF DETAILS AS NOTED •

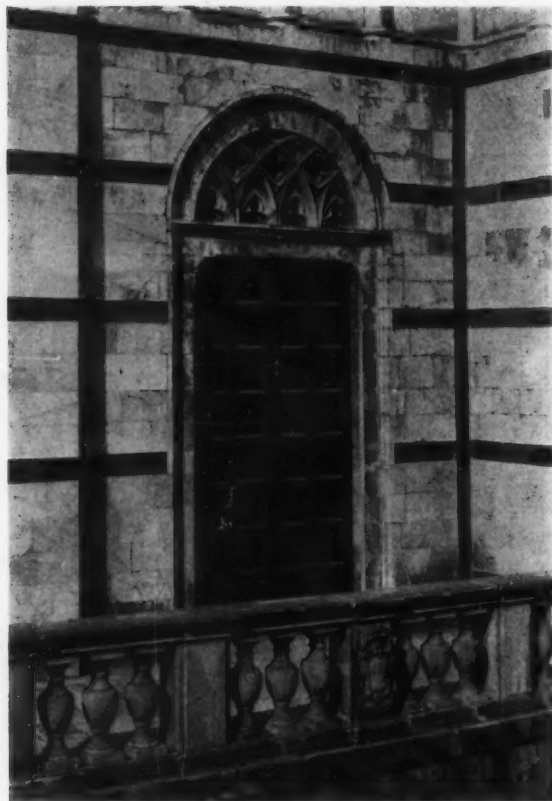
SIENA • 1923

CHAS B MCGREW

ITALIAN RENAISSANCE DETAILS

A SERIES OF MEASURED DRAWINGS

By CHARLES B. McGREW



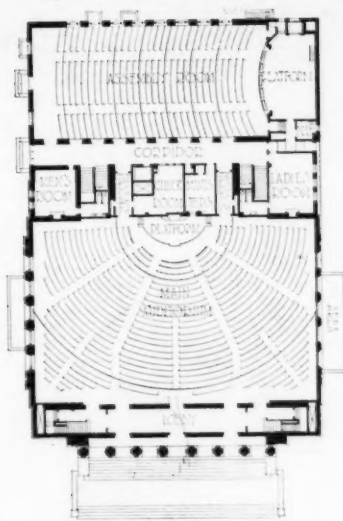
DOORWAY, SIENA CATHEDRAL

PROBABLY because Italy is so steeped in classic tradition, the Italian architects made little of the Gothic when at the hands of the builders of every other country of western Europe it was being given an individual development. Even when use was made of Gothic forms, they were combined with motifs derived from other sources.

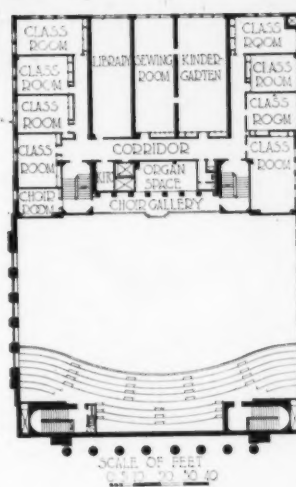
This doorway from Siena Cathedral is an illustration. The details of the jambs suggest those of many old doorways in Lombardy and elsewhere in northern Italy, and the tracery above, while Gothic in form, is reminiscent of the Gothic seen in Venice, which is strongly tinged with the Byzantine, while the doors themselves are of a type found in old churches over all Italy. Nevertheless, the simplicity and charm of the doorway give it a value of its own, since, while it is used in a building intended for ecclesiastical use, it possesses elements which would render it equally appropriate for a structure of almost any other type.



BASEMENT PLAN



FIRST FLOOR PLAN

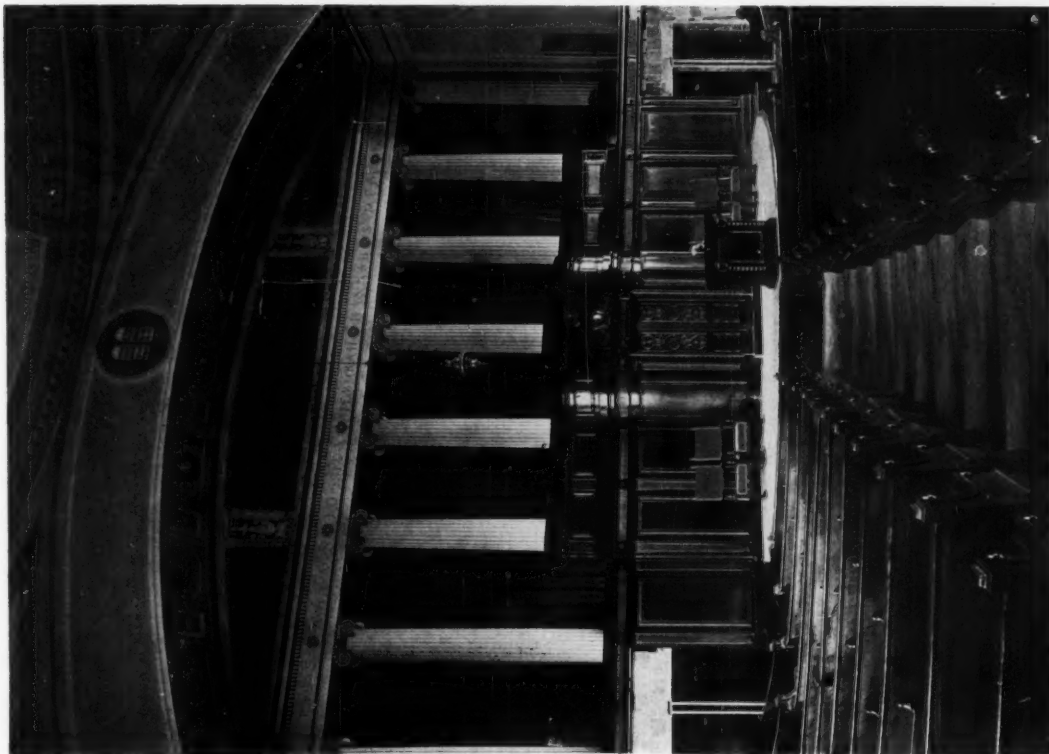


SECOND FLOOR PLAN

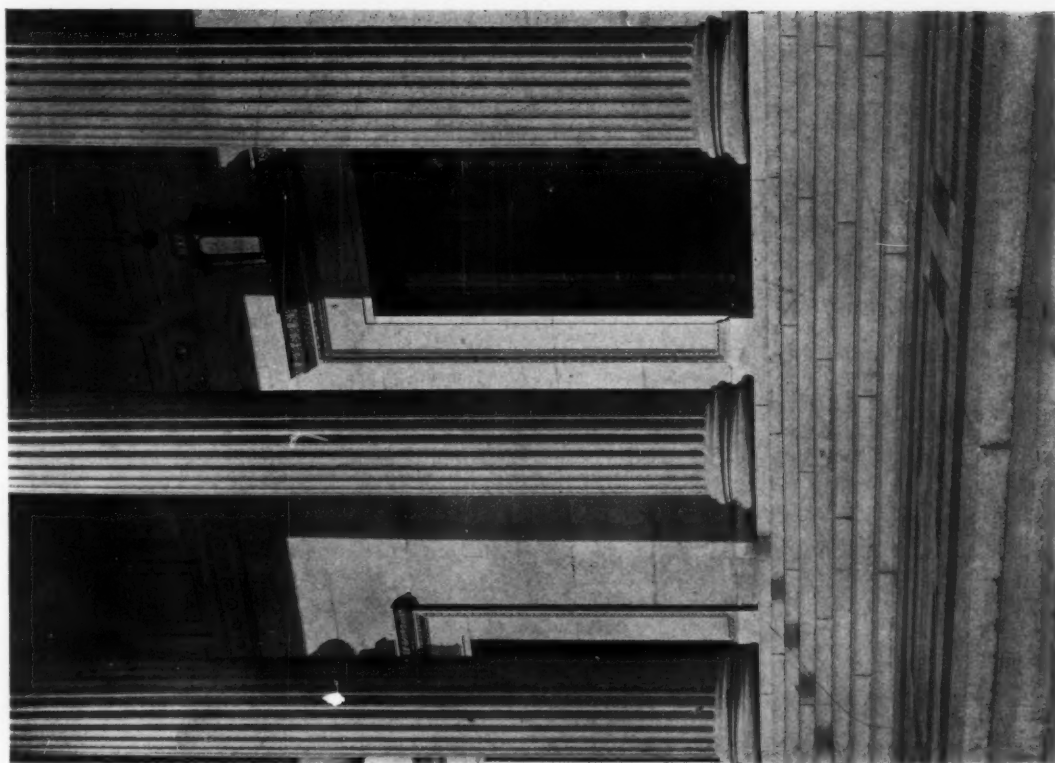
TEMPLE BETH-EL, DETROIT
ALBERT KAHN, ARCHITECT

Photos, John Wallace Gillies

Architectural
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INTERIOR LOOKING TOWARD PLATFORM



DETAIL OF MAIN ENTRANCE

TEMPLE BETH-EL, DETROIT
ALBERT KAHN, ARCHITECT

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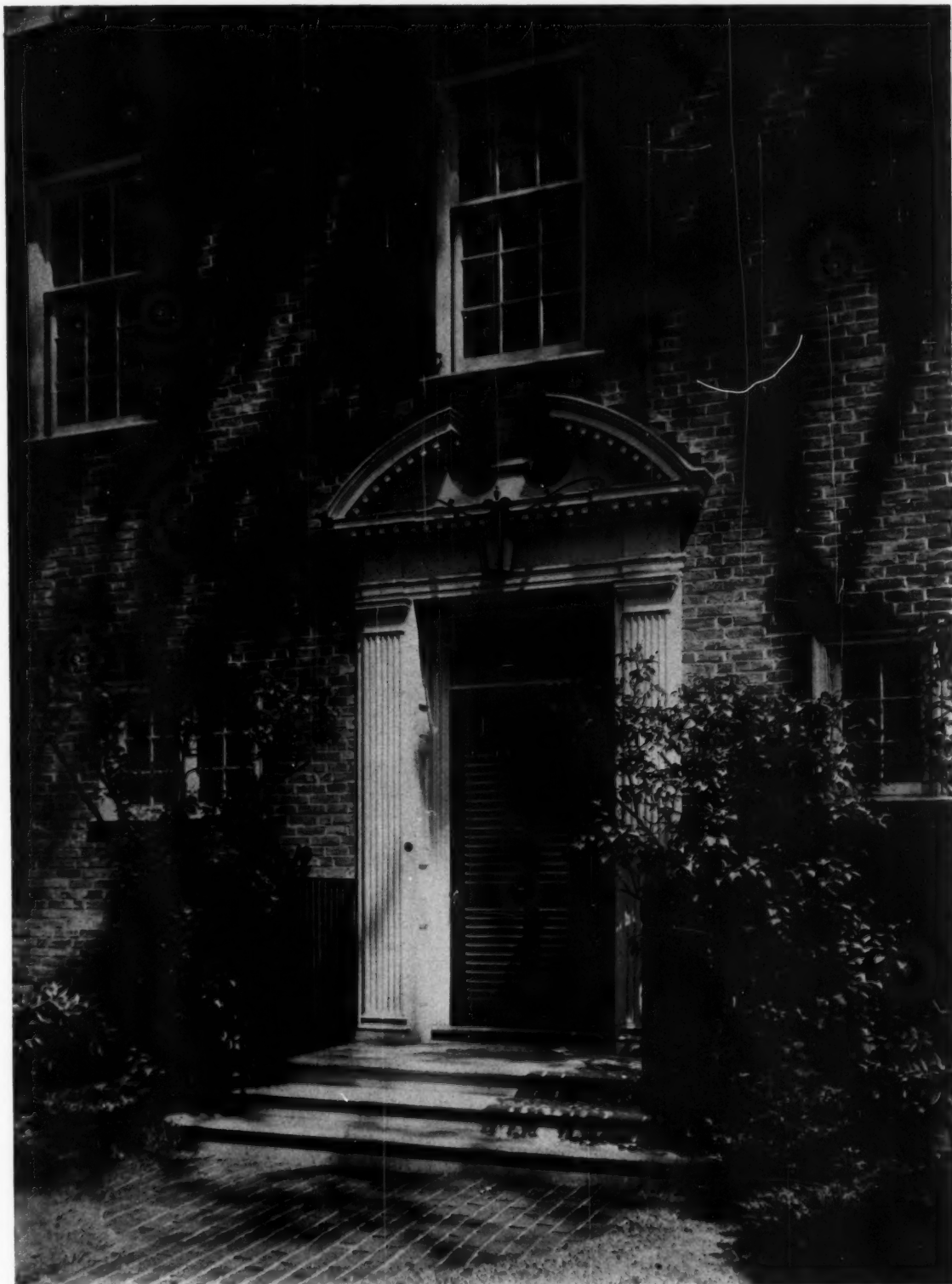


GENERAL VIEW OF HOUSE FROM STREET



HOUSE OF WILLIAM J. HAMILTON, ESQ., FLUSHING, N. Y.
ROGER H. BULLARD, ARCHITECT

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VIEW OF MAIN ENTRANCE DOORWAY
HOUSE OF WILLIAM J. HAMILTON, ESQ., FLUSHING, N. Y.
ROGER H. BULLARD, ARCHITECT

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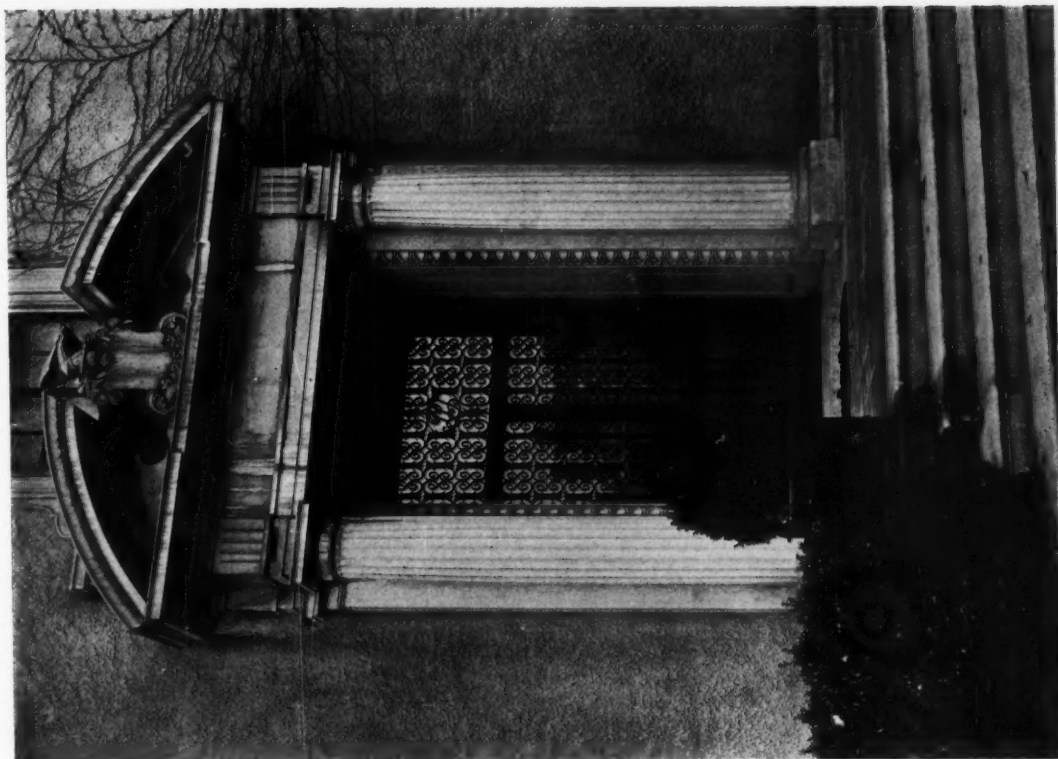
LIVING ROOM FIREPLACE
HOUSE OF WILLIAM J. HAMILTON, ESQ., FLUSHING, N. Y.
ROGER H. BULLARD, ARCHITECT



VIEW OF MAIN STAIRWAY

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DETAIL OF MAIN ENTRANCE

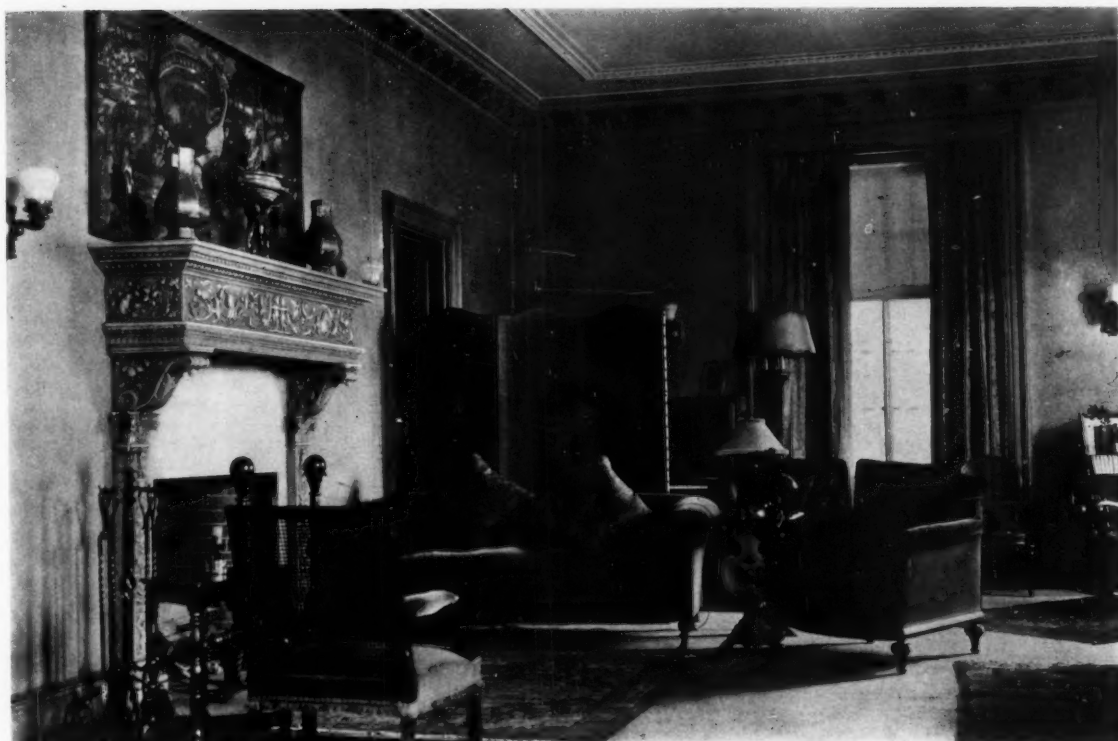
HOUSE OF J. P. TAYLOR, ESQ., RICHMOND, VA.
W. DUNCAN LEE, ARCHITECT



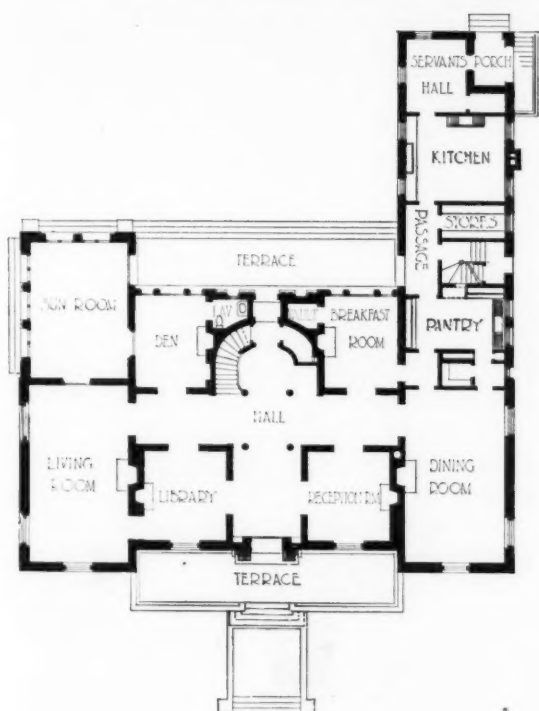
VIEW OF STREET FACADE

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VIEW IN LIVING ROOM



FIRST FLOOR PLAN

SCALE OF FEET
0 5 10 20 30 40



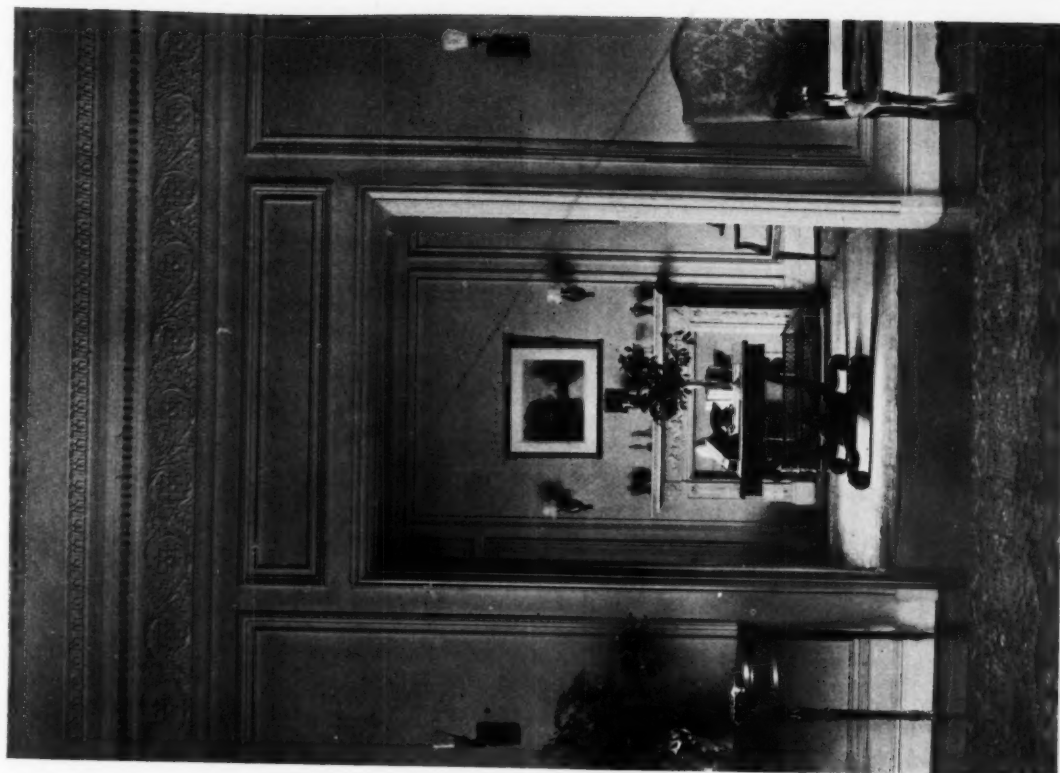
SECOND FLOOR PLAN

HOUSE OF J. P. TAYLOR, ESQ., RICHMOND, VA.
W. DUNCAN LEE, ARCHITECT

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HALL AND MAIN STAIRWAY



LIBRARY SEEN FROM THE HALL

HOUSE OF J. P. TAYLOR, ESQ., RICHMOND, VA.
W. DUNCAN LEE, ARCHITECT

Architectural
Library

Architectural
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ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

Reducing the Costs of Ventilation

By C. W. KIMBALL

THE increased cost of materials, fuel and labor results in an increase of cost of heating and ventilating, and this increased cost raises this question, among others,—whether sufficient attention has been given to ventilation and its costs. If equal or better results can be obtained at approximately one-half the cost of the present accepted systems, there would seem to be no good reason to continue using the same methods as in the past.

The present methods of ventilation, generally considered, assume and require taking air from out of doors; heating it during the winter and delivering it into the rooms to be ventilated at a proper temperature without drafts; also providing means to insure the heated air, after being breathed, escaping out of doors carrying with it all the heat in the air plus a considerable amount of heat given off by the occupants of and lights in the room ventilated. Without considering for the moment the purity of this escaping air, we think it is agreed that allowing this heated air to escape beyond recovery is a loss, because heat means coal and coal means money.

Without going into a technical or extensive defini-

tion of the term "ventilation" it will be assumed that it means providing an adequate supply of fresh air to and exhaust of foul air from a room or rooms so that the air conditions in the room or rooms will be comfortable, healthful and satisfactory to the occupants thereof. All the more recent tests, experiments and results of research indicate clearly that the proper circulation of air is one of the most vital factors in ventilation, with proper temperature following closely, then coming freedom from odor and proper humidity. In other words, the correct movement of air in and about a room and its temperatures are the most important items, with freedom from odor and proper humidity following.

There is no question but what we all want healthful schools, theaters, stores, factories, etc., but we are also sure that up to the present time too little attention has been paid to the question of operating costs. With coal and labor at the present high rates, it becomes worth while considering how to save all the heat we can without endangering the health and comfort of the occupants of the rooms. In a manufacturing proposition, where the cost of production

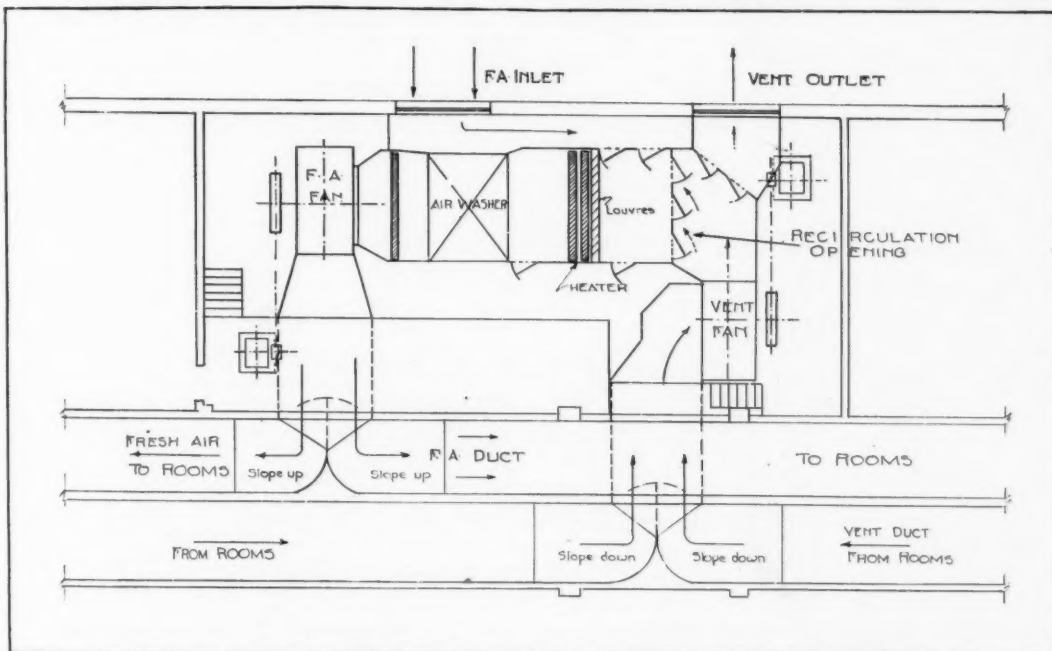


Fig. 1. Air May Be Blown Out of Doors or Diverted into Fresh Air Chamber

must be kept down, any waste as great as the waste of heat due to the present methods of ventilation would be studied from every angle to see if some way could not be devised to overcome and prevent the waste.

In the past it seems to have been an accepted fact that all the air for the rooms must be taken from out doors and heated before being sent to the rooms, and that all the air leaving the rooms must be thrown away. Approximately ten years ago, Dr. J. H. McCurdy, of Springfield Y. M. C. A. College, had a system of ventilation worked out in the new gymnasium there so that he could make actual working tests and experiments to see what could be done to improve the standard methods of ventilation and if possible to decrease the load on the heating system during the cold weather and to reduce to a minimum the waste of heat due to exhausting all the vent air directly to out of doors. This system was based on the idea of re-circulating the air throughout the building except in toilets, lockers, etc., and it has been operated ever since its installation with practically no changes. It has been subjected to all kinds of tests, experiments and examinations, not only by Dr. McCurdy but by others, various committees and interested persons.

To explain more fully what is meant by "re-circulation," we would call attention to the figures included here showing the general scheme of the air circulation in a school and in a theater. These two

buildings are taken simply for illustration, and the same ideas may be applied to the ventilation of rooms in structures of other types.

The heated and washed air is forced by the fresh air fan through the ducts to the rooms to be ventilated and delivered into the room at a velocity not exceeding 400 feet per minute. This air circulates through the room to the vent openings and through vent ducts downward as shown in Fig. 1 and connected to the main trunk duct to vent fans. The vent fan and discharge ducts are so arranged that this air may be blown straight out of doors or in cold weather this warm air can be diverted wholly or in part into the fresh air chamber. In this chamber it is arranged, by dampers, to admit enough cold air from out of doors to cool the air from the vent fan. The air then passes on through the air-washer to the fresh air fan and up to the rooms. Otherwise, the vent ducts may all be taken to the attic and connected to a vent fan which is arranged to discharge out of doors or downward through the fresh air shaft to the air-washer and fresh air fan (outlined in Fig. 2). In many buildings the vent fan can be omitted, simply connecting the vent ducts either in the attic into the fresh air flue or extending the vent ducts downward as well as upward and making the fresh air fan do the entire work (see Fig. 3). With this "re-circulation" system it is planned to carry the vents from the toilets, chemistry laboratories, shower baths, etc., out through the roof separately

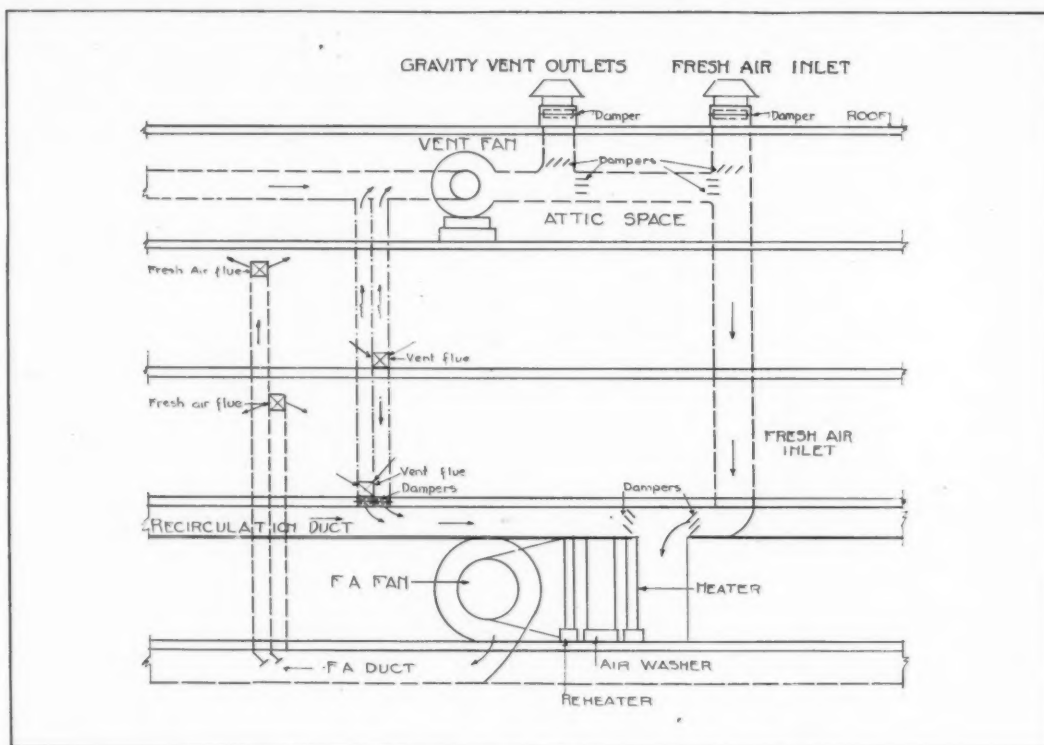


Fig. 2. Air Discharged from Attic or Diverted into Air Washer and Fresh Air Fan

to prevent any trouble due to odors being carried from these rooms into the classrooms, if by any chance the air-washers were not in use.

The same general idea shown in Fig. 2 applies to the theater circulation. In a theater properly equipped it has been found that in cold weather the air can be successfully re-circulated without the air-washers being used except when the theater is crowded. This results not only in a saving of coal but also in a saving of electricity.

As to the question of safety and health with the use of the "re-circulation" system, there seems to be no longer any doubt, as this type of a system has been used and tested in every way for the last ten years at Springfield and has been in use in public schools in Hartford, in Springfield, and many other cities through the South and West, particularly in St. Louis, where the "re-circulation" idea is the standard used in all the schools. Also, several theaters that provide the best and most nearly perfect ventilation have systems based on this idea, it having proved its effectiveness and satisfactory operation with a reduced yearly expense over years.

Unfortunately, the present State Department having jurisdiction over the ventilation in Massachusetts has not officially recognized the "re-circulation" idea, and this undoubtedly has had a retarding effect on its adoption in New England. In other parts of the country the "re-circulation" idea is being used more and more, and as it seems to the writer only a matter of time before it will be recognized elsewhere, this

type of ventilation should be considered when designing buildings, particularly those calling for a large volume of air.

As an example of cost of ventilation using the present Massachusetts Standard system for schools, figures show that a school designed for 1,200 pupils throws away heat units, conservatively figuring, equivalent to approximately \$1100. or \$1200 per winter. If we multiply this by the number of similar schools throughout the state, the loss seems to raise a decided question as to whether the present methods can be considered proper and businesslike.

To further express the wastefulness of the present system of ventilation in the school mentioned it should be noted that the areas of the gravity vent flues through the roof total approximately 200 square feet. This is practically equivalent to taking off 200 square feet of roof each day and expecting to heat the building comfortably with all the heated air escaping.

To illustrate further, take a theater seating 4,500 people operating from 1:30 to 10:30 on a day with an average outside temperature of 20° and supplying 15 cubic feet of fresh warmed air per occupant per minute heated to final temperature of 70°. This means with the present standard system, exhausting all the air out doors, that heat equal in round numbers to 4,200 pounds of coal per day is being sent up through the roof and lost. To this expense must be added the cost of operating the system, also interest and investment on the larger boiler plant.

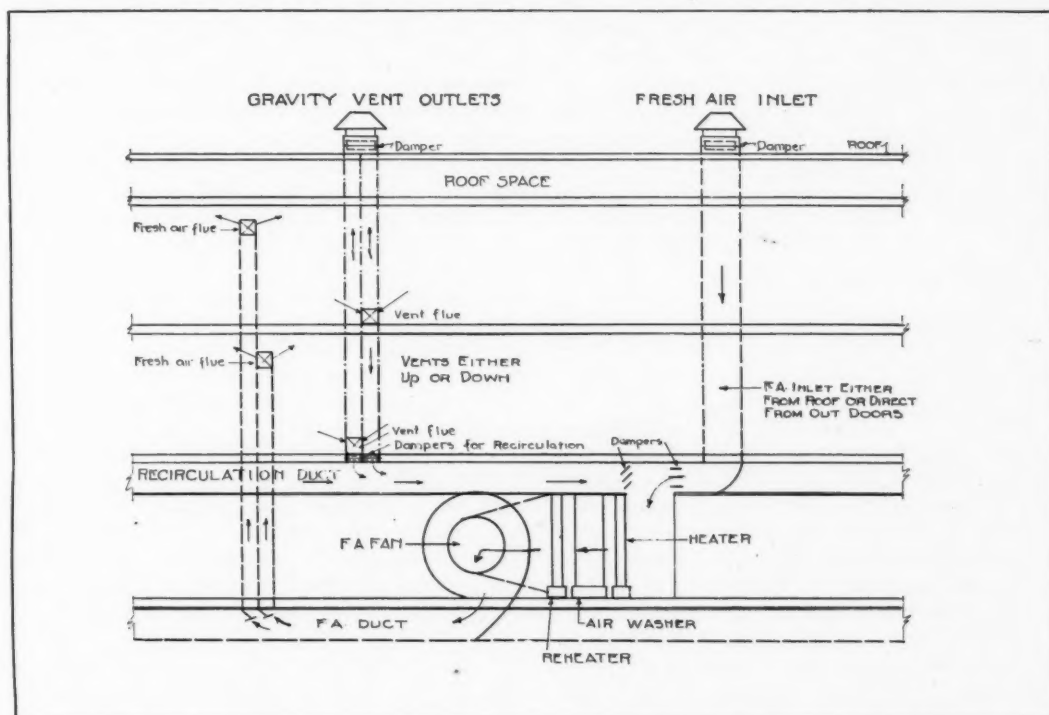


Fig. 3. A "Re-circulation" System to Carry Vents from Toilets and Laboratories

For theaters even this excessive waste has, in the past, seemed necessary and worth while, but as already said, it has been found possible to save all this loss by designing the ventilation system on the basis of "re-circulation," cleaning and washing this warm air, thus conserving all the heat units.

Another feature of ventilation which has a bearing on this re-circulation idea and which is rapidly coming to the attention, especially of theater owners, is the question of adequate ventilation and cooling of theaters for summer use. Some engineers have had the opportunity of watching both the cooled and uncooled theaters and noting the effect that the inside temperature and air circulation have had on the box office receipts. In the past the hot summer season has been by far the least profitable part of the theatrical year for theaters, except at summer resorts, but the experience of certain Chicago theaters proves that with a real system of ventilation and including properly cooled air, it is possible to change all this. The ventilation and cooling systems have made the summer season in these theaters even more profitable than the winter season, thus greatly increasing the whole year's profit. The success of the ventilation system with its heating and cooling plant is based on re-circulation of the air, as it has been found impractical to use all outside air either winter or summer, due to the excessive cost of heating in the winter and of cooling in the summer.

As to the possibility of using this re-circulation system, it has been found that with proper planning, when the buildings are designed, the ventilation system can be so adapted to the building that the actual cost of the entire structure is even less with the re-circulation system than with the present methods. The boiler plant can be made smaller, the piping less expensive, and the duct and flue system, properly planned to fit into the building, will cost but little if any more than with the present methods. After the buildings are built and put in use, the expense of operation is in some cases reduced from 40 to 50 per cent, making a yearly saving that will speak for itself.

As an example of this, one theater was equipped with a satisfactory re-circulating system handling 30,000 cubic feet of air per minute to the theater, and after several years of operation the results show that satisfactory ventilation has been secured and practically no more coal has been burned than was the case the years before when there was no fresh air supply and the ventilation was unsatisfactory. Also a large school in Hartford, well equipped with a real re-circulating system, has been operated satisfactorily and unusually economically for the last six years. This building has approximately 1,650,000 cubic feet of space, and the fans deliver 50 cubic feet of air per occupant per minute, or a total of 74,000 cubic feet of fresh air per minute. Only

one 110 h.p. boiler is used during the entire winter. Compare this with a Massachusetts Standard building of approximately the same cubic feet of space with fans delivering only 30 cubic feet of air per occupant per minute, or a total of 72,000 cubic feet per minute and using two 150 h.p. boilers during the entire season.

The economy and efficiency in ventilation by re-circulation, as demonstrated by Prof. Larsen of the University of Wisconsin and the New York Ventilating Commission, have been repeatedly realized by other users of this method of ventilation. In some cases the season's cost for fuel with the re-circulation system in use has been found to be but 40 per cent of the cost of fuel when using outside air. The cost of the operation of such a re-circulating system then becomes materially less than is the cost of operating the window ventilating system, for which low operating cost is claimed.

From this it will be seen that it has been demonstrated fully that with a properly planned and installed re-circulation system of ventilation, equal or better results can be obtained with re-circulation ventilation at approximately one-half the cost than with the present standard system of all outside air "in" and all inside air "out," and let it cost what it may.

Another feature which should be seriously considered in connection with ventilation is the fact that there is a decided tendency among the operators, during the cold weather, to slow up or even shut down the ventilation system when designed to take air from out of doors. During the cold weather opening the cold air windows and starting the fans bring an added heavy load to the boiler plant, which is already being taxed above the average to supply steam to the direct radiation to heat the building. Furthermore, not using the ventilation system during this weather makes a marked showing on the coal records and this reduces the yearly fuel cost. With a re-circulation system, the starting of the fan or fans without taking in any outside air does not materially increase the load on the boilers as just noted, but immediately begins to help heat up the entire building and thus becomes a very material help toward making the building comfortable both from the standpoint of heating and that of ventilation.

This feature makes possible a reduction in the amount of direct radiation required in the rooms, a reduction in the boiler power required for the whole building, and as the ventilation system (by re-circulation) becomes a part of the heating system, its operation becomes assured, whereas with the older type, since the ventilation can be shut down without affecting the heating and with a direct saving in the cost of operation, the occupants of the rooms are quite likely to go without during the cold weather.

Handbooks; Their Use and Abuse—II

By E. N. PIKE

IN a previous article, in the March issue of THE FORUM, reference was made to some of the results of use of structural steel handbooks by inexperienced designers. Plate girder design furnishes a large percentage of the blunders of the amateur. Probably 75 per cent of the graduates of our technical schools, in applying for their first opportunities in structural design, will solemnly assure you of their ability to design girders. In justice to our schools it should be said that many of them make good the claim, but unfortunately neither school nor handbook gives much information for the feats of ingenuity that the structural designer must perform to keep within the limits fixed by architectural requirements.

There are at least five very common errors made in designing girders:

- (1) The selection of a web too thin for shear or for sufficient bearing value for rivets,
- (2) Flange sections that are not well proportioned in the relative area of flange angles and cover plates,
- (3) Using cover plates under conditions where it will be impossible to develop the strength of plates in the distance between the ends of successive plates,
- (4) Unsupported or insufficiently supported compression flanges,
- (5) Improper or uneconomical arrangement of stiffeners.

As most of these conditions may be regulated more or less by building codes, no definite rules will be given here.

Economical design is very often quite as much a matter of keeping down labor cost as it is of using the minimum of material. The use of too thin a web, if it necessitates reinforcing plates with necessary fillers, may result in using more metal than necessary for a web of sufficient thickness, requiring not only more metal but also more labor.

A flange section with about one-half the area in angles is in very good proportion, but often impossible. It then becomes a matter for experienced judgment to fix the proportion. Where to begin to use cover plates is often a matter that does not receive intelligent handling. It happens not infrequently that a girder designed with too thin and narrow cover plates is weaker than the girder without the plates, the effect of holes in tension flange having been overlooked.

If architectural conditions limiting the depth of shallow girders carrying excessive loads or heavily concentrated loads near the end are fixed without careful study of girder details, a condition frequently results that may be impossible to overcome, or which will be so expensive to meet as to be prohibitive. For example, suppose that the web of a girder may be 30

inches deep, and the total depth over all is not to exceed $36\frac{1}{2}$ inches, with a width of covers not to exceed 14 inches. Using 8×6 angles of maximum thickness and a web of say 1-inch thickness with reinforcing plates outside of angles of perhaps $\frac{3}{4}$ -inch thickness, is about the maximum that can be accomplished without cover plates. If the required strength can be obtained by the addition of 3 inches of covers top and bottom, the problem appears to be solved. But it may still be impossible to put in sufficient rivets to develop the strength of the various members within the limits fixed by position of loads. Rivets in the web will have four shears; and if spacing to suit stiffeners does not unduly reduce the number of rivets, there may be no difficulty here.

The covers may present insurmountable difficulties if the space is short. If the 3 inches of plate is to be made up of four $\frac{3}{4}$ -inch plates with a unit stress of 15,000 in compression, twenty-six $\frac{7}{8}$ -inch rivets will be required to develop each plate; this will require about 21 inches, and for four plates, 7 feet. If the distance available is less than 7 feet, the condition becomes practically impossible, for the amateur at least, and the depth should be increased. The tension flange may require slightly more space, depending upon unit stresses and the degree to which section is maintained. A girder such as has been described is not unusual, and the section suggested does not entirely exhaust the resources of an experienced designer, but they represent a limit which the amateur should approach with caution, and beyond which he should seek advice.

Proper support of compression flanges is difficult to secure in many cases. If not obtained, proper allowance must be made in unit stresses, and the maximum ratio of width to length should be fixed with regard to nature of loading, whether quiescent or otherwise.

It will be useless to attempt advice regarding allowable spacing of stiffeners. The building code may tell us what to do. But even here the fashions change, and webs that yesterday required stiffeners today may not so require, or vice versa. In the absence of other requirements the formula $d =$

$$85t\sqrt{\frac{18000}{s}} - 1 \text{ may be used; } d = \text{distance between}$$

stiffeners; t = thickness of web; s = shear per square inch; d should not exceed 6 feet if depth between angles exceeds 60 times the thickness. Stiffeners at concentrated loads and at bearings should be proportioned with care, although it frequently appears that they were fixed by chance or guesswork. Under ordinary conditions the value of rivets connecting stiffeners to vertical leg of flange angle may be considered a part of load to be carried by stiffener. The use of fillers over flange angles to clear fillet may be advisable sometimes to allow both legs of stiffener

angle to be counted at full bearing value. In this case the rivets described should not be considered.

For the type of girder described in a preceding paragraph it will be evident that a considerable portion of a superimposed load will be carried into the web by rivets through flange angles in the space immediately under load, and that this amount should be deducted from the load for which stiffeners are proportioned. For this condition and also for the top flange of crane girders carrying heavy wheel loads, it should be remembered that the resultant of the horizontal and vertical shears on a rivet should be used in determining rivet spacing.

Some attention must be given to diameter and length of rivets required for girders such as we have been considering. Specifications frequently limit the grip of rivets to five times the diameter, and specify an increase in number if this ratio is exceeded. It will usually be no hardship to require $\frac{7}{8}$ -inch rivets for grips of from 3 to $4\frac{1}{2}$ inches, and 1-inch rivets for 4 to 6 inches, and to use the rule for excess grip only when absolutely necessary. With the best intentions, the designer frequently finds that due to stiffeners and framing connections the thickness of metal is too great. If unavoidable, this condition calls for turned bolts and holes drilled in the solid or subpunched and reamed.

Whether to use a girder or a truss is often a perplexing question, and no very definite rules can be given. The girder lends itself readily to convenient connections, and for the same depth is perhaps more rigid at a slight increase in weight over the truss. Its simplicity of details may decrease the cost sufficiently to offset the increased weight. For supporting a roof where steelwork is exposed a truss may be preferable on account of its lighter appearance, and in many instances its open spaces readily permit the passage of ducts and pipes.

While the engineer would often welcome some legal prohibition of girders and trusses of too little depth, he hesitates to fix the ultimate limit to which he will go. Somewhat depends upon the situation in which they are used and the degree of rigidity necessary. A plate girder with uniform load on 60-foot span, 30 inches deep, at 16,000# fiber stress will deflect about 2 inches; at 8,000# fiber stress, about 1 inch. If the depth is 5 feet, the corresponding deflections are reduced one-half.

A considerable vertical motion is therefore possible, depending upon the proportion of live load to

the total. A deflection of $\frac{1}{360}$ of span is generally permissible so far as effect upon a plastered ceiling is concerned, but girders are frequently used in positions where they must carry vertical walls with plaster as well as horizontal ceilings. It will be evident that the vertical plaster may suffer severely from a deflection that will not affect a ceiling.

In the design of trusses, and especially roof trusses, more metal is intentionally wasted than in any other way. The designer hesitates to use single

angles in the web for fear of criticism, or perhaps on account of appearance. If the design is made by the steel fabricator, he hesitates to use a single angle, fearing the criticism that he is skipping his work. In many instances in light trusses single angles would suffice for all the web members at a considerable saving of steel and labor. The inexperienced designer, however, very often overlooks conditions that require two angles, as for example the web member meeting a knee brace should be of adequate size. Too often the knee brace is merely added to the design without regard to its effect upon the truss or column. If the purpose of the knee brace is to resist wind, its effect upon both column and truss should not be overlooked.

In determining the outline of trusses for pitch roofs it is not uncommon to disregard more or less at end supports the proper intersection of reaction and strain lines of rafter and bottom chord. It is not always convenient to do this properly, nor is it necessary if the effect of such variation is recognized and provided for. The detail at this point is often deficient in transverse stiffness when the gusset is thin and short. Rivets in the bottom chord should be determined by the resultant of chord stress and reaction if the bottom chord rests directly upon the support. Gussets are often badly proportioned with little regard to work to be done. An old time rule requiring the use of hitch angles if more than five rivets are required for a member, is one that may be followed in spirit if not in letter. This, however, is too often disregarded where most needed, at supports and ridge or hip joints of top chords of heavy trusses. If gussets cannot be brought above chord angles to receive hitch angles, some other equivalent should be devised. Bent plates outside a hip or ridge joint do not make a theoretically satisfactory splice. The experienced detailer usually feels that he can lay out gussets by his sense of proportion, but for heavy stresses near the edge of a plate it is very easy to be mistaken.

In the light of all the common errors mentioned, it might seem that failure of steel structures would be very frequent. This would undoubtedly be true were it not for the fact that assumed live loads are often in excess of actual conditions over the entire area of structure. Dead loads are usually more accurately known, and are often underestimated.

The old time allowance of 25 per cent increase for stresses due to combined bending and direct stress, may nowadays be too close to the elastic limit for real safety. We are accustomed to think of the elastic limit as about one-half the ultimate strength; there is, however, none too much data as to the behavior of members made up of several parts, and probably about 24,000# per square inch is a safer assumption for usual conditions and workmanship.

Of course the handbook cannot compensate for a lack of knowledge of mechanical principles, but it is indispensable as a labor-saver in furnishing the data for nearly all the details of design referred to.

EDITORIAL COMMENT

NEW YORK'S WAR MEMORIAL

SINCE the plan of the Mayor's Committee on Permanent War Memorial of the City of New York was submitted last January to the Board of Estimate and Apportionment, two distinct controversies have developed—one over the suitability of the location selected, and the other over the appropriateness of the design accepted. In both decisions the public and the profession seem to feel that the Mayor's Committee has ignored their wishes and suggestions as set forth in various reports submitted during the past five years by the Municipal Art Society, the Chapter of the American Institute of Architects, the Fine Arts Federation, the Art and Executive Committee, and the Jury of Artists. From these several reports as well as from the report submitted to the Mayor of New York at the close of last year by Rodman Wanamaker, Chairman of the Mayor's Committee, a brief history of the undertaking to erect in New York a War Memorial may be obtained.

Upon the signing of the Armistice on November 11, 1918, Mayor Hylan appointed Mr. Wanamaker to form and to head a large committee of representative citizens, henceforth known as the Mayor's Committee on Permanent War Memorial. From this committee Mr. Wanamaker at once selected an Art and Executive Committee, with Paul W. Bartlett as Chairman, which proceeded immediately with the erection of a temporary Arch of Victory from the designs of Thomas Hastings, architect, on Fifth Avenue at 24th Street. This arch of plaster, which greeted our returning soldiers during the spring and summer of 1919, so appealed to many citizens that a movement was started to preserve it in permanent form, and for this purpose a large amount of money was privately contributed. This fact has perhaps influenced the Mayor's Committee in its final decision to accept a design containing a repetition of the arch motif.

It was not until November 1, 1919, that definite steps were taken to hold a public hearing for the submission of suggestions or plans as to what form a permanent war memorial in New York should take. Following this public hearing on November 18 of that year, the Art and Executive Committee invited the public, the art and patriotic societies to submit suggestions or plans in open competition of ideas for a permanent war memorial, and selected a Jury of Artists consisting of twelve of New York's leading sculptors, painters, architects and authorities on art who should judge the proposals.

In response to the announced competition for

ideas some 67 suggestions were received and exhibited to the public at the City Hall in February, 1920. The Jury of Artists under the Chairmanship of Edward Robinson, one of their number, viewed the submitted suggestions for the memorial, held a number of meetings, and finally reported April 15, 1920, that no proposal in all details as submitted was sufficiently meritorious for the Jury of Artists to recommend its adoption to the General Committee, but that considered broadly, the competition had suggested several types of memorials worthy of consideration—"a memorial arch, a cenotaph, a statue or sculptural group." The most important point brought out both in the report of the Art and Executive Committee as well as in the report of the Jury of Artists was that an open competition should be held under the auspices of a new committee to be appointed by the Mayor to be made up of members of the principal art, architectural, sculptural and engineering societies of New York. The method to be followed in holding this competition was clearly stated in the report of the Jury of Artists as well as the recommendation that a careful survey should be made of all possible sites in the City of New York suitable for the memorial.

Some time after this report, submitted by the Jury of Artists on April 15, 1920, the Mayor's Committee approved of the first idea that the memorial should be in the form of an arch. After continued deliberation this committee reached no decision as to a suitable location, and the Mayor's Committee itself ceased to exist with the resignation of its Chairman, Mr. Wanamaker, on December 23, 1921. The following April Mayor Hylan again appointed Mr. Wanamaker as Chairman of a new Committee on Permanent War Memorial which again took up the deliberation on the design of an arch or arches and the site to be chosen, finally accepting without competition of any sort the design submitted by Thomas Hastings, architect.

That a dispute involving so much dissension and criticism should have arisen in connection with an undertaking of foremost civic interest is unfortunate indeed. A War Memorial erected without the approval and support of public sentiment would fail in its intended purpose. To end this dispute once and for all the present plans should be abandoned and steps immediately taken, first to select and secure a suitable site outside of Central Park, and, second, to hold a new and nation-wide competition based on a definite program as set forth in the report of the Jury of Artists on April 15, 1920, which seems to have been pigeon-holed and forgotten in the archives of the City Hall.

Plate Description

TEMPLE BETH-EL, DETROIT. Plates 73, 74. The exterior of this well planned and thoroughly equipped temple, designed by Albert Kahn, shows an application of simple classical forms to a building simply designed. The doors which open from the colonnaded portico lead into a shallow vestibule which in turn opens into the main auditorium. Here the seats are arranged in the form of a semi-circle, with more seats in a gallery.

Floor plans of the temple make provision for the different forms of social service which many religious bodies render today. Part of the building is four stories in height, and upon these floors are arranged departments of different sorts. The basement, in addition to the usual boiler and furnace rooms, contains a dining room equipped with kitchen and pantry and accessible from the other floors by stairways and elevators, and lockers, toilets and showers in connection with a gymnasium. The larger part of the main floor of this portion of the building is given up to an assembly room with stage and footlights, while upon the second floor there are classrooms, library and sewing room, and a choir room which opens directly upon the singers' gallery in the main auditorium. Upon the two upper floors there are more classrooms, board rooms, and offices for the rabbis and their secretaries.

HOUSE OF WILLIAM J. HAMILTON, ESQ., FLUSHING, N. Y. Plates 75-77. In this residence, of which Roger H. Bullard is architect, there is seen the continually growing tendency toward the following, in domestic architecture, of definite historic types. The house is of a kind which might have been built in Virginia; Maryland, or in any one of

several of the New England states during the latter part of the eighteenth century, of brick with roofs of slate and with wood used for the exterior trim, including the architrave of the main doorway with its pilasters and broken pediment. Choice was made of brick possessing considerable texture, and with richness of color, particularly in the headers. The slates upon the roofs are of variegated colors and different thicknesses.

The plan of the main floor is such that as one enters the house the arrangement of the rooms and the extent of the size of the house are at once seen, and the service departments are more completely separated from the rest of the house than is generally the case.

HOME OF J. P. TAYLOR, RICHMOND, VA. Plates 78-80. Walls of this large house, designed by W. Duncan Lee, are covered with stucco of fairly rough texture, while the roofs are of tile. The arrangement of the building with a central three-story pavilion flanked by wings of two stories affords a structure sufficiently large to be given a somewhat formal treatment which is continued within, where a highly dignified stairway faces the main entrance, and upon the main floor a wide hallway extends across this main axis, the different rooms opening from it.

ERRATUM. We regret to find that by an oversight credit for designing the lectern and pulpit of St. Paul's Church, Newburyport, Mass., illustrated on pages 182 and 183 of THE FORUM for April was incorrectly given. The designing of both was done, we are informed, in the office of R. Clipston Sturgis.



"Sketching in Bruges," Belgium

Photograph by Harold C. Whitehouse, Architect

DECORATION & FURNITURE

Details of the Small Library, Hotel de Chaulnes, Paris

A CHARACTERISTIC INTERIOR IN THE STYLE OF THE EMPIRE

Described and Drawn by C. HAMILTON PRESTON

THIS charming little library of the "Style Empire" is found at No. 9 *Place des Vosges*, in the Hotel de Chaulnes. In the first part of the seventeenth century this hotel belonged to the Sieur Fougeu Descures, counselor to the king and field marshal of the armies of France, by whose heirs it was sold in 1644 to Honore d'Albert, Duc de Chaulnes. Thereafter follow a long line of successors, among them the Duc de Luynes and the *famille de Nicholay*, until in 1858 we find it occupied by Mlle. Rachel, the illustrious tragedienne.

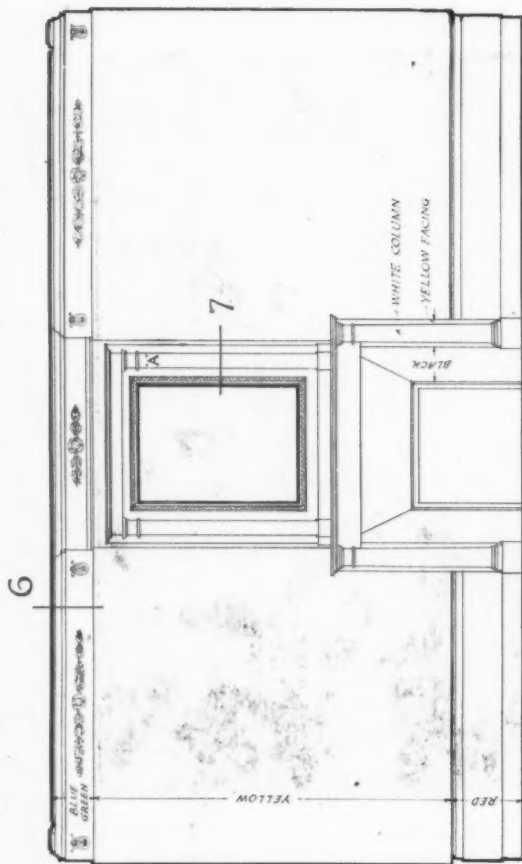
The interiors of the hotel have been done over at different epochs, as indicated in the grand salon where are found mouldings of the epoch of Louis XIV, with ornamental details of the last years of the reign of Louis XVI and panels of arabesques in relief, with beautiful designs of cupids and eagles combined with flowers, and also in the dining

room where niches occur with pediments of Louis XVI detail and exquisite over-door panels of Louis XVI carving, together with mouldings of Louis XIV character.

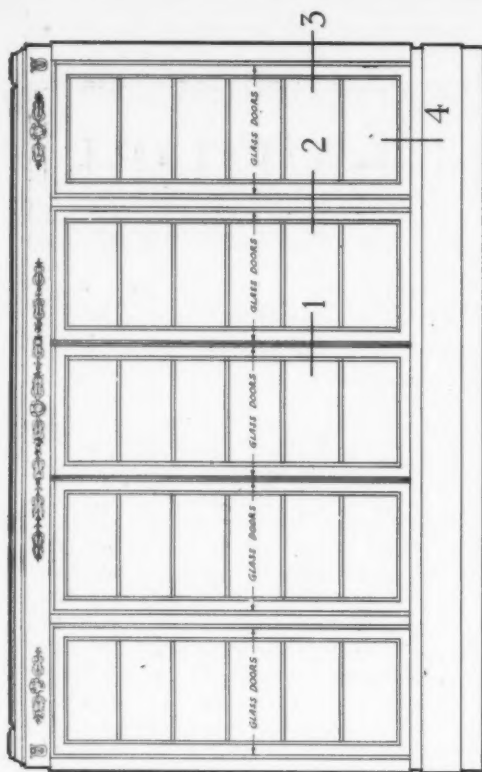
The little library here presented, which was remodeled in the "Style Empire," is very simple in design but rich in color and marbling throughout. The entire dado is deep red, somewhat the color of bloodstone, with grayish veinings; the walls are rich yellow with variegated veinings; the cornice background is grayish blue-green, quite deep in tone, and the carvings, in relief, are cream white. Certain of the mouldings of the cornice as indicated are picked out in red of the same shade as the dado. The mouldings around the glass of the bookcases are pale Indian red. The mantel with its rather deep gray bases, white marble columns and yellow facings makes a pleasing contrast with the marbled walls.



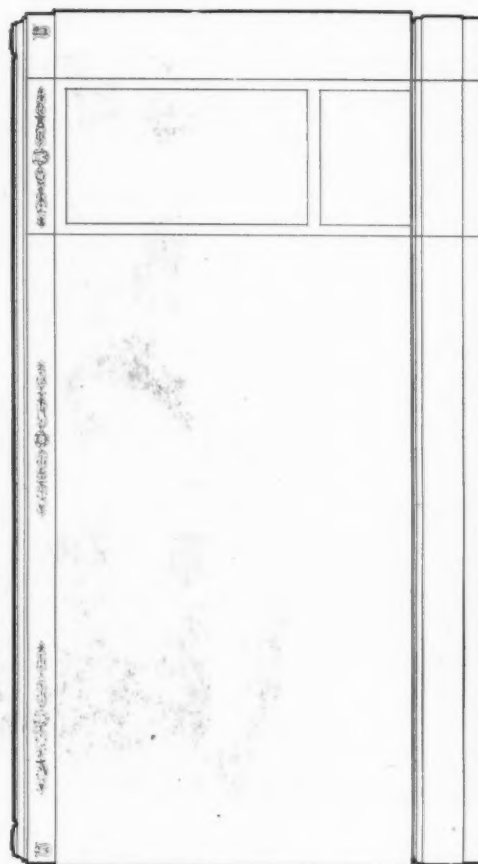
Empire Decorations in the Hotel de Chaulnes, Paris



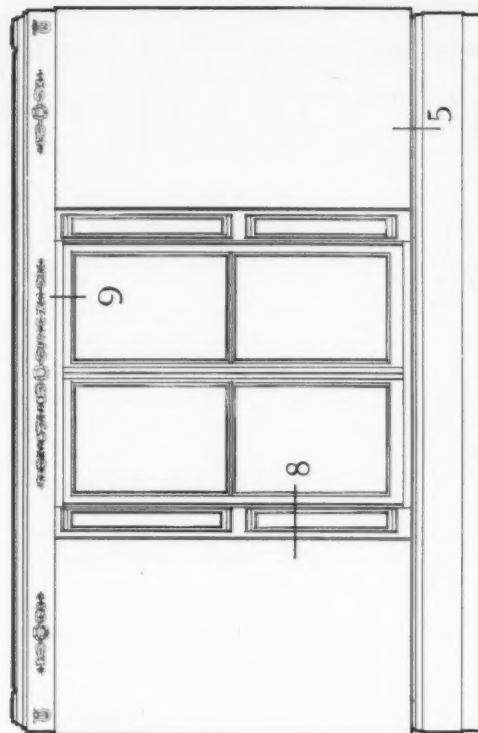
SOUTH ELEVATION



WEST ELEVATION



NORTH ELEVATION

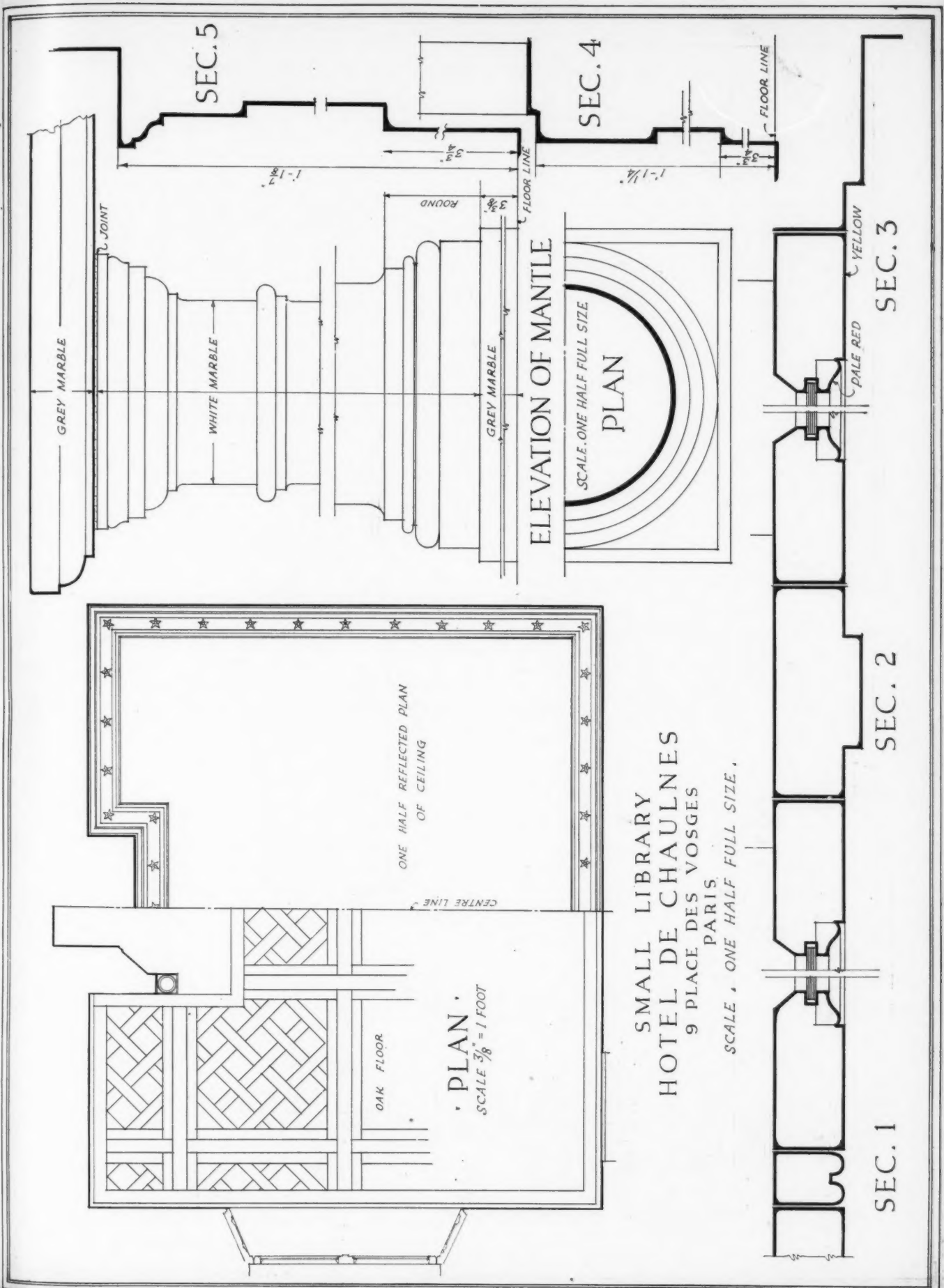


EAST ELEVATION

SMALL LIBRARY
HOTEL DE CHAULNES
9 PLACE DES VOSGES
PARIS
SCALE $\frac{3}{8}$ " EQUAL ONE FOOT

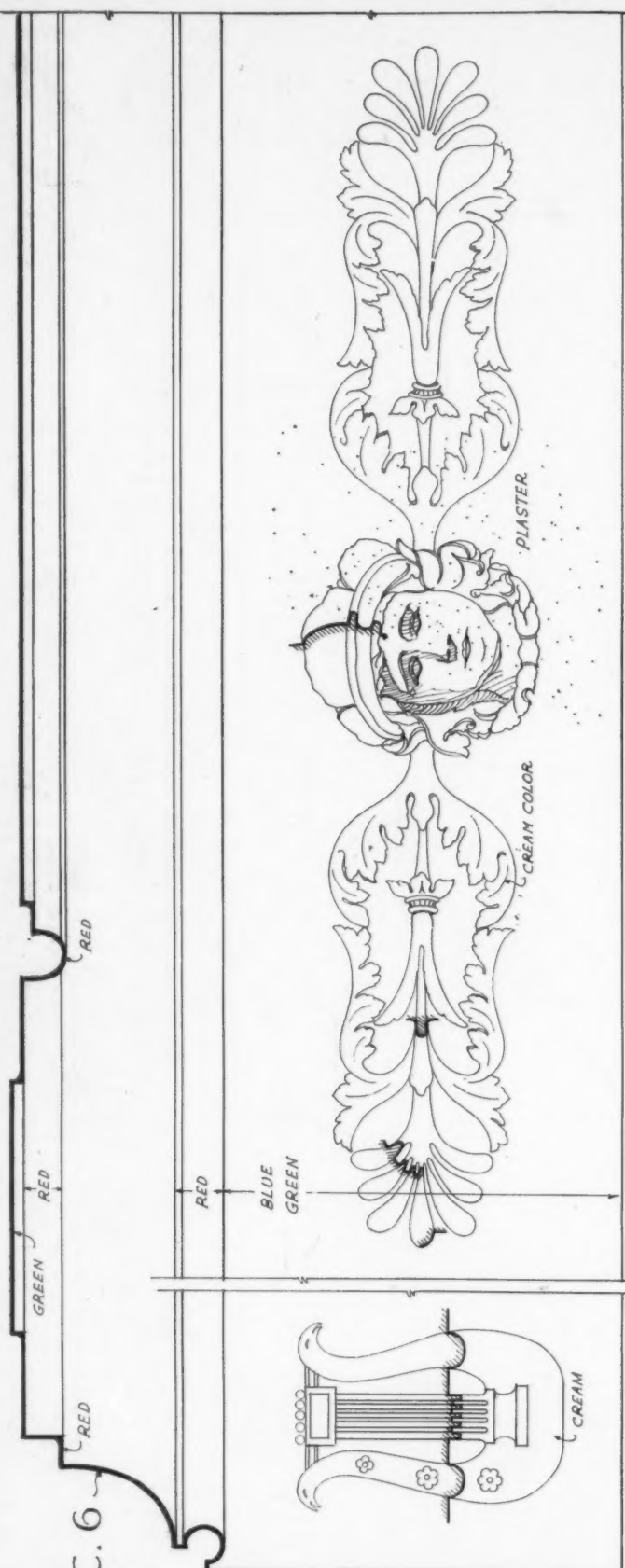
SCALE 3/8" EQUAL ONE FOOT

1984

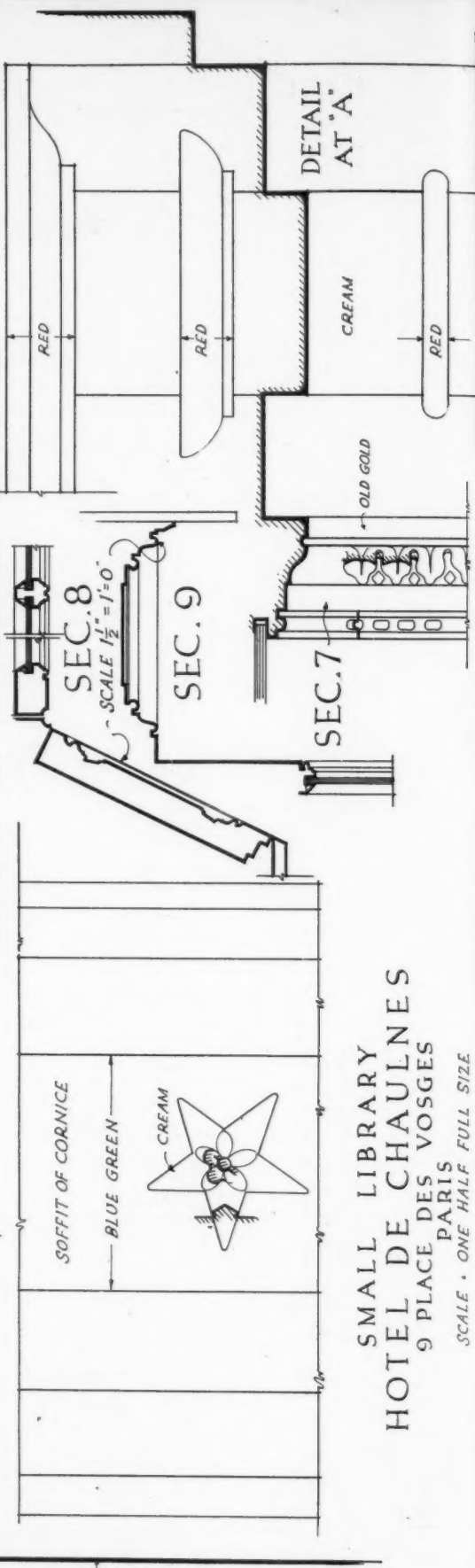


SMALL LIBRARY
HOTEL DE CHAULNES
9 PLACE DES VOSGES
PARIS
SCALE, ONE HALF FULL SIZE.

SEC. 6



DETAIL OF PLASTER CORNICE



SMALL LIBRARY
HOTEL DE CHAULNES
9 PLACE DES VOSGES
PARIS
SCALE - ONE HALF FULL SIZE

SERVICE SECTION of THE ARCHITECTURAL FORUM

Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

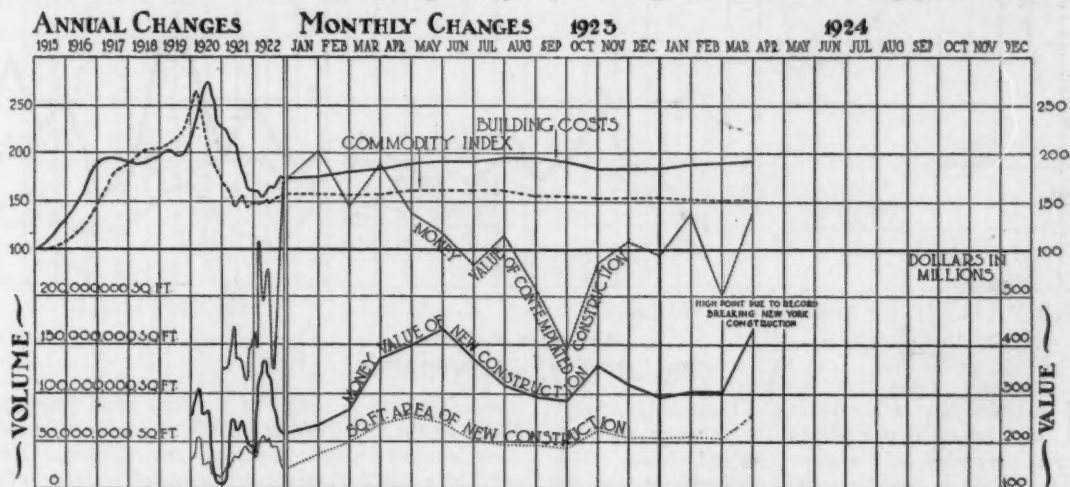
The Building Situation

THE new construction figures for the month of March present a particularly interesting situation. As forecast in the last issue of THE FORUM, the volume of plans filed throughout the country has increased greatly over the month of February, indicating that fairly stabilized construction cost has encouraged many operators to enter the first stage of filing plans and taking contract figures.

The total volume of contracts let in March, according to the F. W. Dodge Company, is 44 per cent greater than that of the month preceding and 15 per cent greater than that during March of last year. A considerable proportion of this increased volume is due to record-breaking activity in the New York district, which if subtracted from that of the remainder of the country shows a slight decline of volume in March which is normal for this time of the year. The New York situation, however, is responsible for the unusual volume which represents one of the highest monthly peaks of contracts let recorded in American building history.

In the New York area, where the pressure of new construction activity is greatest, the general prices of building materials and labor are remaining fairly well stabilized, and if this condition obtains over all the country, it would seem that two important elements are present for a record-breaking year: First, the expressed determination of architects, builders and owners to carry out many new projects this year. Second, the evident intention of manufacturers of wisely accepting a volume market rather than discourage this large amount of new business through sudden price increases. If this condition holds soundly during the next two months, we shall witness the development of a building boom even greater than that of last year.

In analyzing the charts presented on this and the next page, definite consideration should be given to the facts that the New York territory is contributing strongly to the forming of totals and that building activity has not developed abnormally in other sections of the country, although the evidence of plans being filed indicates a strong general increase.

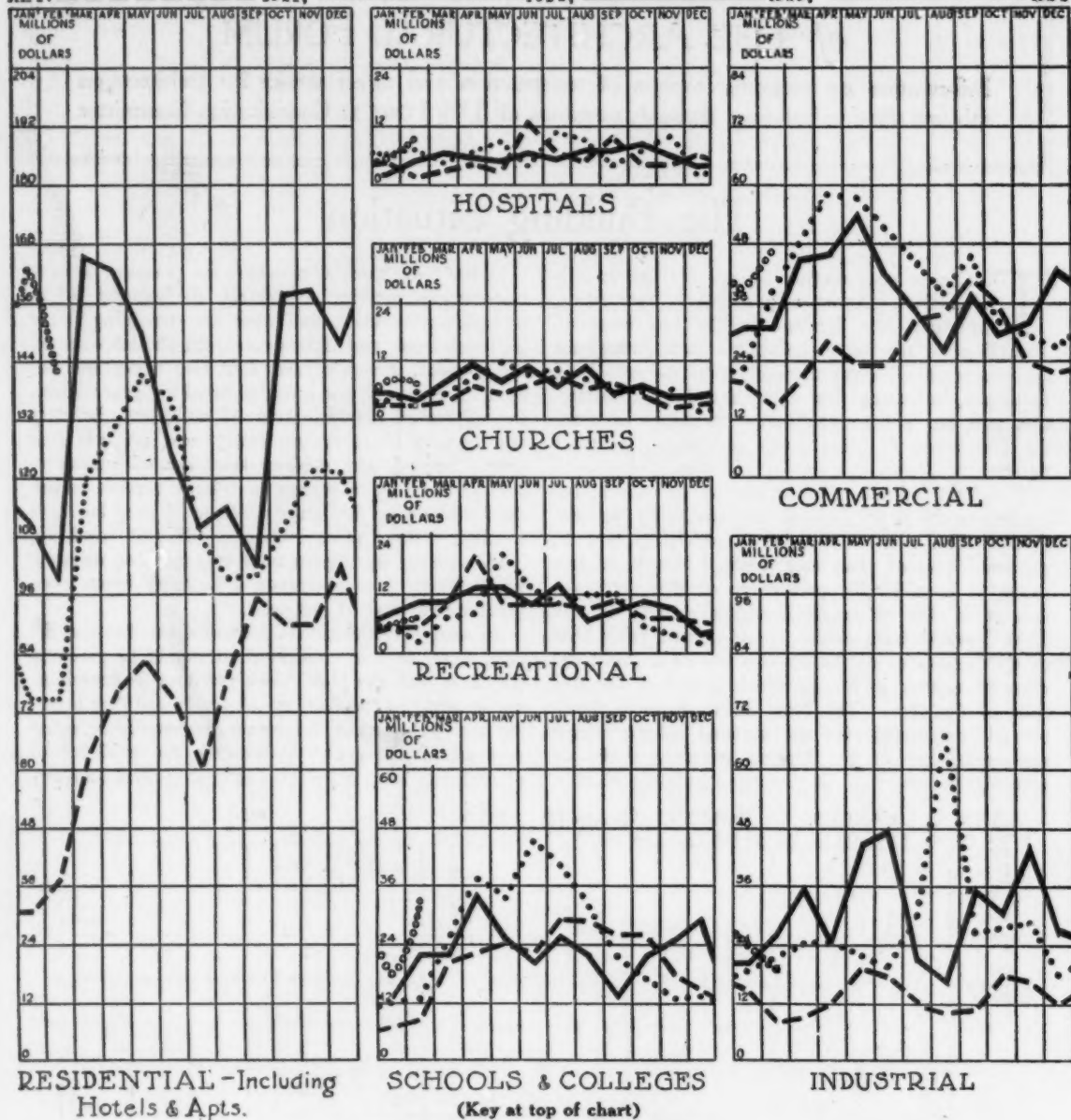


THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index.* Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction.* Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Co., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the right of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the left of the chart. The variation of distances between the value and volume lines represents a square foot cost which is determined first, by the trend of building costs, and second, by the quality of construction.

Monthly Analysis of the Trend of Building Activity

A study of the value of contracts let each month in seven important types of buildings—with graphic comparisons for the three preceding years

KEY: ———— 1921; 1922; ———— 1923; 1924



FEBRUARY 1924 CONTRACTS

IN order that a comparison of monthly activity may be made at a glance, the value of contracts let is presented in the above graphic charts. This information is based on data obtained through the United States Chamber of Commerce and the F. W. Dodge Corporation. The activity of each year is shown by a special line according to the key indicated at the top of the page. Thus, on each chart the activity in the form of Money Value of Con-

tracts Let may be followed through from January, 1921, to the most recent month for which figures were available when this page was printed. Not only is a rapid comparison provided of the total activity each year, but the relative activity for each month can be estimated by referring to the index figures representing millions of dollars as shown at the left of each chart. Reports cover about three-quarters of the total building in the United States.

THE FORUM CONSULTATION COMMITTEE

A group of nationally known experts on various technical subjects allied to building, providing a direct service to architects

THE editors of THE ARCHITECTURAL FORUM have been fortunate in obtaining the co-operation of the following recognized experts who constitute THE FORUM Consultation Committee. This Committee provides a service of the greatest value to subscribers in addition to the usual editorial service, and architects who seek information on specific questions in these various fields are invited to present inquiries.

The basis on which this Committee has been organized is:

- (a) That each committee member shall be a representative leader in his line;
- (b) That no committee member has affiliations with any manufacturer;
- (c) That no committee member will be called upon for detailed service excepting by special arrangement;
- (d) That a special editorial article on a subject represented under each of the headings below shall be prepared during the year by the committee member.

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DANIEL P. RITCHEY

Known in the hotel field as the "hotel doctor," Mr. Ritchey, who is an engineer as well as an experienced hotel owner and manager, is qualified to answer any questions which may arise in this connection.

HEATING AND VENTILATING

CHARLES A. FULLER

Consulting, Heating and Ventilating Engineer

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ELECTRICAL SCIENCE

WILLIAM L. GOODWIN

Vice-president of the Society for Electrical Development

This Society is organized to promote accurate knowledge of the practical application of electricity. Its activities extend from the simple problems of household equipment to highly developed electrical plants. Particular attention is given the development of provision for electrical service in buildings.

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Secretary and Chief Engineer, National Safety Council, Chicago

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FIRE PROTECTION ENGINEERING

J. D. HUNTER

Chief Engineer, Marsh & McLennan, Insurance Brokers, New York

Specialist in insurance engineering as applied to building design, construction and equipment.

BUILDING MANAGEMENT

J. CLYDESDALE CUSHMAN

President, Cushman & Wakefield, Inc., Real Estate, New York

Mr. Cushman's firm has participated largely in the promotion and operation of many large New York buildings. His specialty is the management of office buildings.

GAS SERVICE AND UTILIZATION

NILS T. SELLMAN

Service Engineer, American Gas Association

A specialist in problems pertaining to gas service and its use in all classes of buildings and industries.

THE FORUM DIGEST

A SURVEY OF IMPORTANT CURRENT ARTICLES ON BUILDING ECONOMICS AND BUSINESS CONDITIONS AFFECTING CONSTRUCTION

The Editors of this Department select from a wide range of publications matter of definite interest to Architects which would otherwise be available only through laborious effort

FINANCING INVESTMENT PROJECTS

IN a recent issue of *The Straus Investors Magazine*, F. S. Marlow writes regarding the relationship between plan, structural design and income of a building project: "The building situation is always of paramount importance to general business because of its far-reaching effects. This is especially true today when the whole industry is permeated with economic, financial and social complexities, the untangling of which requires not only careful handling but the introduction of as many helpful elements as possible.

"Much assistance can come from within, and builders, architects and contractors can greatly help by redoubling their efforts to obtain maximum efficiency in planning and building, since each step in this direction invariably reduces cost and increases income. By developing his project so as to obtain the maximum skill of his architect, engineer and contractor, the builder will gain advantages in rentable area, in architectural and structural design, and in cost of material and equipment which, in most cases, will produce a safe ratio of income to cost and thus release for investment a project which might otherwise be abandoned or indefinitely postponed.

"Underestimating the value of good architectural services, together with inadequate compensation and unfair time allowance, usually results in poorly developed plans and subsequent loss, through excessive cost and low income. Generally, the ultimate loss in cost and income, not to mention the loss in the intrinsic and artistic value of the architectural design, is out of all proportion to the saving in commission and time.

"For instance, in a 10-story building of 2,000,000 cu. ft. contents, originally requiring 128,600 sq. ft. of curtain wall, by obtaining the proper plot solution and general layout, the wall was reduced to 100,000 sq. ft., thereby saving 28,600 sq. ft. of curtain wall. Such a saving alone, would account for approximately half of an architect's full commission. Again, if 100 rooms are added by efficient planning, the additional income obtained for one year, at \$480 per room, would nearly cover a full commission.

"It is generally conceded that a

policy which does not recognize these facts is responsible for the plans of a number of apartment houses in current construction having been so poorly solved that costs have been increased from 10 to 15 per cent, while their income possibilities have suffered loss of from 15 to 25 per cent in rentable space.

"Since maximum efficiency is one of the principal factors today in the conduct of our most successful industries, we cannot but take this opportunity to call attention to the present necessity for the exercise of the utmost care and intelligence in the development of new building projects. It is not only important but imperative that those who propose building for investment purposes should retain capable architectural, engineering and building service. If the builders and their associates will recognize the importance of this policy of securing the utmost efficiency in the development of their projects and act accordingly, there will be not only less shelving of hastily conceived plans and less blaming of the labor and material markets for low ratios, but an increased production of commercially sound buildings."

THE STATUS OF DOMESTIC OIL HEATING

AS there is so much discussion regarding oil for domestic uses, and as it is such a lively art at this time, with so many different minds working on devices, it is most important that the subject of oil for this purpose be discussed in order to know what to expect in the way of fuel oil for the future," said A. H. Ballard, at the Annual Meeting of American Society of Heating and Ventilating Engineers.

"Most domestic burners are designed for use with oil commonly known as gas oil, which runs in gravity of something over 32° Baume, and any make of burner ought to be condemned that has been designed so as to be wholly dependent upon this oil for its success, for the reason that the market for this oil has in the past ten years been more or less fluctuating with various sources of information from reliable refiners, and it is very liable to be uncertain as to price in future. The reason is that gas oil has many qualities and it can be refined into higher grade products which are worth more money than

could be had for oils burned for fuel.

"An equipment that burns the heaviest oil possible is best, for the heavier the oil the more B.t.u.'s there are per gallon, and the less liable it is to fluctuate in price. So long as the world demands gasoline, so always will there be fuel oil. Whereas, with gas oil, as it has a considerable amount of available gasoline, whenever there is a higher market for gasoline (making it profitable to further refine this gas oil), then automatically the price rises to a point where it would be uneconomical to use it as a fuel for house heating. On the other hand, the price for fuel oil cannot rise above a point where it becomes prohibitive for use in furnaces as it has no higher value, nor is there any other market where it could be used that would bring a better price than that of being used as a fuel.

"Consequently, the logical domestic oils are of a gravity from 20° Baume to 32° Baume. This is an ideal oil, there is plenty of it, and, owing to the fact that it flows freely at zero, it does not need preheating—a requirement which excludes for this purpose any oil heavier than the oil mentioned.

"Classifying, then, the oil that best meets the needs for fuel purposes, developing a burner that will use this oil becomes most essential to produce anything of a permanent nature. This means that all burners of the vaporizing type must be excluded since a burner of this type must use a fuel of very light gravity in order to burn successfully and will not work successfully with a fuel oil.

"The science of burning fuel oil consists of the complete atomization of the oil, and air introduced so that each atom of oil is immediately surrounded with air for perfect combustion. The means for atomizing this oil is not paramount to its success, but an oil burner together with the oil-burning system must be designed simply, have a minimum number of working parts, must be well constructed, and above all, the use of gravity fuel oil tanks must be condemned.

"For the success of a domestic oil-burning equipment for the present, at least, the storage of oil should be thoroughly considered and an oil-burning installation should not be installed without an oil storage for at least three weeks' supply. In the

future it might be that there will be deliveries of fuel oil from door to door in 5-gal. lots, but at the present time the scattered deliveries mean so much in the way of added cost that it is not an economical way of handling fuel.

"It must be remembered that the entire question of oil burning is one where service is paramount to everything else for, finally analyzed, the distributor is not only selling an oil burner or oil-burning equipment, but he is selling a fire and to commercialize this, he must sell this fire to women and children. The distributor must always have trained forces on hand to render service before he may sell installations, so that in case of trouble, trained hands must be available to make the necessary adjustments or replacements.

"With the domestic house-heating equipment, the automatic features are absolutely necessary to the equipment. A properly installed system must have maximum controls, whereby in a hot water system the temperature of the water shall not rise above a predetermined temperature, and in a steam heating system, the pressure in the boiler shall not rise above a certain limit; if these limits are exceeded, the fire must go out. In connection with this, there should be room temperature control, which is adjusted so that when the temperature of the room rises to a certain figure, the fire goes out.

"Often, due to cheaply installed heating systems where improper devices are used for releasing the air from the radiators, some part of the system becomes sluggish or slow, with the result that while the temperature might register 70° in the living room, other radiators might be cold; the operator of the system observing this condition is naturally led to decide that the fire should be burning when the automatic control has shut it off, and in most cases the system will then be tampered with to find out why the fire does not burn. The result is generally, that the system is put out of commission and service is necessary.

"As already said, the science of oil burning involves complete oil atomization and air introduction. It can be readily understood that there is no great mystery to oil burning, or at least nothing that is not well understood. The only qualifications therefore, that go to make up an ideal domestic system are simplicity, factors of safety, and proper installation with proper service available.

"There is a great deal said about the price of domestic equipment, and a great many people are making mistakes by putting in small storage tanks. This is practically the only item that can be cut down on that would not affect the working of the system, and consequently, due to sales resistance, the manufacturers are selling equipment, making little or no recommendation for proper storage.

"To sum up, recommendations for the consideration of an engineer for the benefit of those interested would be:

1. The system should burn oil of not lighter than 32° Baume fuel oil.

2. The burner should be of the atomizing type.

3. There should be no part of the equipment located inside of the boiler, so that in case of emergency, such as stoppage of the electricity, a temporary wood fire may be started to meet the emergency.

4. All dampers should be of a size so they cannot close more than 80 per cent of the area of the smoke pipe.

5. All equipment installed with an oil-burning system should be of the very best materials and workmanship, securely fastened, all parts in a convenient place, and so constructed that it can be kept clean and frequent supervision made thereof.

6. The question of noise, both mechanical and combustion, should be taken into consideration in any type of an oil burner, because the system may be very quiet in one place, and in another the effect may be offset, and the vibration may be heard throughout the house.

"The matter of noise is a problem that all manufacturers have confronting them every day and can only overcome it when they reduce it to practice in each individual instance and put an expert on the job to analyze conditions and adjust the system thereto.

"In conclusion, when a comparison of value is asked for between oil as a fuel and coal, virtually it requires 156 gals. of oil to equal 1 ton of coal, when a given percentage of efficiency is used in both cases and where a fair standard of B.t.u.'s in both coal and oil is taken. However, in ninety-nine cases out of a hundred, the comparison shows much more in favor of oil, due to the fact that the furnaces for coal burning are so varied that it is astonishing how crudely coal is burned in the majority of cases of which the writer knows.

"Statements have been made by manufacturers that 100 gals. of oil equal 1 ton of coal. This is not true in the case of heat values. However it is a fair assumption to say that 135 gals. of oil will equal 1 ton of coal when reduced to practice in each domestic unit properly installed. The questions of virtue of oil in the way of saving labor, ash removal, and dirt as shown by salesmen, are points well taken. The consumer properly equipped with an oil-burning system would suffer in the way of heating costs a great deal before he would change back from oil to coal.

"Oil burning as applied to residences has not even started as yet, and the future will show rapid growth."

STATE ARCHITECT URGES STANDARDIZATION BEFORE N. Y. BUILDING CONGRESS

SEVENTY-THREE per cent of the families of New York State cannot afford to live in houses at the present cost of construction," said Sullivan Jones, state architect for New York, at a meeting of the New York Building Congress held at the Commodore Hotel, February 27. This statement was made in connection with a discussion of simplified practice and standardization as applied to the building industry. Major Arthur E. Foote of the Bureau of Simplification, Department of Commerce, told in detail about the work of his bureau in reducing the number of the variety of sizes in different lines of merchandise. Going into the subject of simplified practice, Major Foote said:

"We define simplified practice in a very simple way. It is not standardization. It is allied to standardization, but standardization is much more technical. Simplification is, in effect, the elimination by industrial groups of the unnecessary, the obsolete, the excessive varieties in sizes and types, of commonplace articles, for the purpose of eliminating waste in production, distribution, and consumption.

"This simplification matter had two parents. One of them was the report on waste in industry made when Mr. Hoover was president of the American Federated Engineering Societies, which found that wastage in six basic industries average 49 per cent of all the time, effort, labor, and material put into them. The other parent was the Conservation Division of the War Industries Board, which, through the stress and the compulsion of war, found it necessary to conserve labor and material."

Mr. Jones then said:

"From our survey we found that 73 per cent of the families in this state cannot afford to live in houses at the present cost of production. That is an impossible situation.

"Your committee has taken the first step forward in becoming a part of the American Standards Committee, which is coördinating American standardization with foreign standardization. It can do another thing; it can put into practice those standards which have been established, and there are 18 or 19 of them applicable to the building industry.

"There is another thing which you can do; you can standardize practice, but I hate to use the word in that connection. Let us say 'unify' practice in New York. There is a tremendous need for unifying practice in the matter of writing specifications. All of us write specifications, and all of us who try to read specifications realize what a mess most of them are and how difficult it is to extract the information from them which they contain.

"There is a very simple formula

which you can all work on. A specification really consists of three parts. The first part can be expressed by the word 'Where.' Let us say distribution. The second by the word 'What' (the material). The third by the word 'How' (the application).

"Where? What? How?"

"The what and the how can be standardized. The 'Where' is all that we really need to write into specification. Those are the paragraphs which apply the standards to the particular job. If that were done, or if the attempt were made, we would soon find out where our standards were lacking and we could begin to feed that information into the American Engineering Standards Committee.

"That involves another question, which is the question of relating specifications to the drawings. There is a tremendous amount of confusion there. They are redundant. They are in conflict. With the standard specification you could take a good deal of information off your drawings.

"One architect here in New York, for whom I have the highest admiration as a practitioner, indicates no materials on his drawings."

FIRE TESTS OF BRICK WALLS

By S. H. INGBERG

BRICK walls have been generally recognized as effective in preventing spread of fire, but building codes differ greatly in requirements relating to thickness of walls, owing in large part to lack of definite knowledge regarding their heat insulating properties and stability under fire conditions. Series of fire tests and fire-and-water tests are being conducted at the Bureau of Standards, U. S. Department of Commerce, on walls of representative clay, sand-lime, and Portland cement-sand brick to develop the information necessary for safe and economical construction. The test walls, 11 feet high and 16 feet wide, are built under conditions intended to secure the quality of masonry obtainable in building construction, and in the fire tests are exposed to a controlled test fire on one side for periods up to six hours, which is deemed to cover the range of exposures incident to fires in buildings.

In the fire-and-water tests a hose stream from a 1½-in. nozzle under 50 lbs. water pressure is applied over the hot side, following a one-hour fire exposure.

The walls so far tested have either been restrained by being built into rigid containing frames or have been unrestrained with full opportunity for expansion at sides and top. The greater number of walls were laid with brick flat in common or American bond with one header course per five stretcher courses. Some test

walls were built hollow with brick on edge, headers and stretchers alternating, of the type known as the all-rowlock Ideal wall construction. The thicknesses were generally 8- and 12- or 13-in., although with clay brick a few tests of 4-in. walls were made. Most of the walls were laid in Portland cement-lime mortar of the proportions 1:1¼:6, the batch measure being one bag cement, one bag hydrated lime weighing 50 lbs., and 6 cubic feet of screened damp sand, the average dry content of which weighed 78 lbs. per cubic foot. Two walls were laid in a 1:3 Portland cement and sand mortar, and two in a 1¼:3 hydrated lime and sand mortar.

On application of heat the greater expansion of the wall materials on the exposed side caused deflection of the central portion of the wall toward the fire and the top of the unrestrained walls away from the fire. No walls 8 inches or more in thickness collapsed from deflection. Four-inch walls developed failure or excessive deflection after from three to six hours fire exposure. The cracks formed in the restrained walls were seldom over ¼ in. wide, except at the borders at the panel frame where larger openings were formed on the unexposed side by the tilting of brick by deflection of the wall. In the unrestrained walls cracks up to ¾ in. wide were formed on the unexposed side. These generally became smaller toward the exposed side. Little spalling of the brick units in the fire tests occurred, although there were frequent longitudinal cracks parallel with the face of the wall ½ to ¾ in. back of the exposed face. Fusion and fluxing up to about ½ in. of brick thickness on the exposed side occurred with one kind of surface clay brick and to a less extent with cement-sand brick. There was also some incipient fusion on the exposed side of the hard sand-lime and the shale bricks, the fusion effects being all confined to the last hour of the test. Only the exposed brick lost strength appreciably from the fire exposure. In respect to freedom from cracking, fusion effects, the loss in strength, the brick may be placed in the following approximate order: Red burning, high fusing surface clay brick; light burning low fusing surface clay brick; Portland cement and high silica sand brick; soft sand-lime brick; hard sand-lime brick; and shale brick. No general separations of exposed and unexposed layers of brick occurred, the one header course per five stretcher courses in the solid walls, and headers alternating with stretchers for the hollow wall, being a sufficient tie against the stresses induced by fire exposure.

Temperatures were measured in the furnace, at representative points within the wall, and on the unexposed surface. Open or imperfect joints in

the brickwork were revealed by early steaming on the unexposed side. Temperature changes higher by from 10 to 100 per cent than at the regular outside walls locations occurred at cracks and open joints near the end of the fire tests with 8-in. walls. Under cotton and excelsior pads placed against the outside surface, these temperature increases ranged from 5 to 60 per cent above those at points freely exposed to the air. The range of maximum temperatures obtaining on the unexposed surface at points exposed to the air and not directly on cracks or imperfect joints, is given in Table 1, the temperatures being in all cases the highest at one of five or more locations.

Maximums at reg. locations,
Nominal thickness Degrees Fahr.

and type	High	Low	Av.
8-in. solid	367	192	259
8-in. hollow	522	453	486
12- to 13-in. solid	190	172	179
13-in. hollow..... (at 5 hours)			172

TABLE 1—MAXIMUM TEMPERATURES ON THE UNEXPOSED SIDE OF BRICK WALLS AT THE END OF 6-HOUR FIRE TEST

Temperatures were also measured within the walls, the critical point being 4 inches from the unexposed face which is generally the greatest depth to which combustible floor and partition members are entered. Taking 250° C. (482° F.) as the temperature that may cause ignition of such members, this limit was reached in 8-in. solid walls in 1¼ to 4 hours, in 8-in. hollow walls from 1 hr. 8 min. to 1 hr. 26 min., and in a 13-in. hollow wall at 3 hrs. 36 min. This temperature was not attained in the 12- and 13-in. solid walls, the temperature 4 ins. from the unexposed face being within a few degrees of 222° F. at 6 hours.

The maximum center deflections of the 8-in. restrained walls varied from 1 in. to 5 ins., the average for solid walls being 2.64 ins. and for the hollow walls 2.24 ins. The outward deflection at the top of unrestrained walls ranged from 4.7 to 9.7 ins. with average of 7.63 and 6.20 ins. for the solid and the hollow type respectively. For 12- and 13-in. restrained walls the maximum center deflection varied from 1.10 to 2.05 ins. and the outward top deflection of unrestrained walls from 6.2 to 9.7 ins. Pilasters were built into the 8-in. unrestrained walls to avoid a too extreme condition, since some support is generally given by cross walls, pilasters and similar details in buildings.

In the fire-and-water tests no general collapse occurred although partial local failure developed at the borders of unrestrained 8-in. walls, caused by the washing out of mortar where the adherence to the brick was weak. The water dislodged portions of the brick cracked in the preceding fire exposure and further loss of material was caused by the sudden cool-

ing and erosion, the damage to the brick being about the same as in the 6-hour fire test.

Conclusions

The results of the tests are summarized in Table 2 as fire-resistance periods, these being safe units that can be directly applied to building exposures. They are based on the temperatures developed in the tests, with necessary margins allowed for possible higher temperatures at cracks and imperfect joints and under combustible materials stored against the wall, as well as the possibility of material and workmanship being inferior to that used for the test walls, although considerable care was taken to insure construction representative of actual practice. Materials are considered hazardous that will ignite at temperatures as low as 150° C. (approx. 300° F.), among which can be named nitro-cellulose products (celluloid, etc.), matches, and a considerable number of chemical preparations. Two hundred and fifty degrees C. (482° F.) is taken as the approximate minimum ignition point for ordinary combustible materials of vegetable or animal fibers after the comparatively short exposure incident to building fires. Two hundred and fifty degrees C. (482° F.) is also taken as the temperature at which

combustible floor or partition members framed into the wall from the unexposed side may ignite.

Referring to Table 2, the 4-in. wall is given no classification as a load-bearing member because of the high deflections developed. The 8-in. solid wall is given a 4-hour classification for protecting non-hazardous materials as based on temperatures developed on the unexposed side, but the load bearing properties were not sufficiently determined in the tests so far completed to warrant load bearing classification for this period. For the other uses of 8-in. walls where the resistance period is limited by temperatures within the wall or on the unexposed surface to values of 2½ hours or less, it appears safe to give load bearing classification for 8-in. hollow and solid walls, as well as for all uses of 12- and 13-in. walls, as judged by the deflections during test and strength of brick and masonry before and after fire tests. A further series of fire tests of brick walls under load will soon be undertaken that is intended to determine more definitely the strength of 4-in. and 8-in. walls under fire conditions. At the conclusion of this series a report will be issued by the Bureau of Standards on the whole investigation. It is seen from Table 2 that the framing of combustible members into 8-in.

walls considerably decreases their fire resistance. The resistance of hollow walls thus used can be increased by filling solidly above, below, and between such floor members, with incombustible material. The 12- and 13-in. solid walls were proven adequate for the full 4-hour period under all conditions.

As an aid in applying the resistance periods given in Table 2 to fire conditions in buildings, it can be tentatively stated that fire experience and some experimental investigations on the intensity and duration of fires, indicate that fires in residence and office occupancies do not generally exceed in severity the first hour of the exposure in the tests, and very exceptional fires, if any at all, will exceed the first 1½ hours' exposure. The material housed can generally be taken as non-hazardous. Fires in buildings used for merchandising, manufacturing and storage are known to be of greater severity, possibly in some cases equivalent to the 4-hour exposure, depending on the amount and character of combustible materials present. The above considerations apply to interior exposures. The fire effects on neighboring detached buildings from the burning of an adjacent building can generally be taken as less severe, due to the shielding effects of the walls of the burning building, particularly where of fire-resistant construction, and less opportunity for high temperatures to build up in the open space between them.

SAYS GOOD YEAR IS ASSURED

CHARLES S. KEITH, president of the Central Coal and Coke Company, Kansas City, and a nationally recognized practical statistical judge of the condition of the lumber industry, says:

"The volume of business placed during the first two and one-half months of this year by retailers and consumers of the country amounted to approximately 25 per cent less than that placed during the same period last year, but this period last year witnessed the heaviest bookings of any similar period, regardless of season, in more than nine years. The demand last year was probably created by fear of inability to get stocks and of advancing market, which fear no doubt was caused by the slow delivery in 1922, due to the railroad strike. Another contributing factor to the slackening demand this year has been the fact that in the consuming territory of the United States dealers have not been able to move their stocks on account of weather conditions and bad roads. As a result the stocks of the retailers are practically covered by orders, and with coming of more favorable building weather these stocks will immediately be consumed. Bad weather conditions have not been confined to the consuming territory alone.

Thickness and Type	Interior structural members framing into wall	Materials protected	Load on wall	Fire-resistance period
4-in., solid	incombustible and fire resistive	non hazardous	non bearing	1 hour
8-in., solid	incombustible	non hazardous	non bearing	4 hours
8-in., solid	incombustible	hazardous	bearing or non bearing	2½ hours
8-in., solid	combustible	hazardous or non hazardous	bearing or non bearing	1½ hours
8-in., hollow	incombustible and fire resistive	non hazardous	bearing or non bearing	2½ hours
8-in., hollow	incombustible and fire resistive	hazardous	bearing or non bearing	1½ hours
8-in., hollow	combustible, on one side only	hazardous or non hazardous	bearing or non bearing	¾ hour
8-in., hollow, filled solid at floor lines	combustible or incombustible	hazardous or non hazardous	bearing or non bearing	1½ hours
12- or 13-in., solid	combustible or incombustible	hazardous or non hazardous	bearing or non bearing	4 hours
12- or 13-in., hollow	incombustible	hazardous or non hazardous	bearing or non bearing	4 hours
12- or 13-in., hollow	combustible	hazardous or non hazardous	bearing or non bearing	2 hours
12- or 13-in., hollow, filled solid at floor lines	combustible or incombustible	hazardous or non hazardous	bearing or non bearing	4 hours

TABLE 2—FIRE-RESISTANCE PERIOD OF BRICK WALLS



Electricity as the city man knows it

Now available anywhere—without storage batteries

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Manufacturers' Catalogs and Business Announcements

KENSINGTON MFG. CO., New York. "To Record an Event in the History of Cabinet Making."

The constantly growing number of architects who concern themselves with the decoration and furnishing of buildings which they design and superintend are fully aware of the importance of using furniture of types appropriate for the surroundings. Indeed, furniture might be said to be of almost greater importance to the appearance of an interior than the actual architecture itself, since after all the forms of interior architecture likely to be used today do not include a wide variety of types or even a great number of finishes, while upon the actual furnishings falls the duty of establishing and maintaining the character of the interior. Antiques, because of the strong and definite character they are likely to possess, are of course widely sought after in developing period interiors, but the supply of available antiques is necessarily limited, and therefore the costs of antique pieces are usually too great to permit of their use where they would be most valued.

Now the qualities which render antique furniture so desirable are not those which cannot be had today; age is not in itself of value, and antiques are sought after only because, being old, they are likely to possess that excellence of design or workmanship which is so difficult to obtain today. But excellence of design and craftsmanship are not things which were available only to designers and workmen in the seventeenth century or the eighteenth, and if they will but take the trouble, modern craftsmen can produce work quite as good as any we have inherited from the past. Our criticism of most of the reproductions of antique furniture upon the market today is and long has been that the reproductions fail lamentably in carrying out the spirit of the originals. Only too often the character of a piece is irreparably ruined by some alteration which is thought to be necessary to give the furniture an appeal sufficiently broad to make its manufacture financially profitable,—and yet just here there is involved the spoiling of what gives the piece its value to the discriminating.

Anyone familiar with interior architecture, decoration or furnishing is likely to be informed as to the excellence of the reproductions of antique furniture supplied by the Kensington Mfg. Co. The greatest care is taken, first of all, in selecting furniture of periods which are most likely to interest present-day purchasers, and with this important detail settled there is exercised equal care in obtaining as models excellent pieces of these periods, pieces which in character and scale are suitable for modern use. Then the same care supervises the actual making, the carving, inlaying and other processes involved, and the result is furniture which is an authoritative reproduction of pieces made centuries ago,—an accurate reproduction as to design, not

ruined by unfortunate modifications, and made as well as finished by the same processes and with the same care as were the original pieces. Of course the excellence of these reproductions is widely known, and among other instances of recognition has been the awarding by the Architectural League of New York of its Gold Medal for Craftsmanship as exemplified at its 39th Annual Exhibition, in 1924. To record this recognition of its furniture the Kensington Mfg. Co. has prepared this brochure, privately printed, for the use of architects and others who are likely to be interested. In addition to commemorating the awarding of the medal, the brochure contains illustrations of a number of rooms furnished with Kensington reproductions.

UNITED STATES GYPSUM COMPANY, Chicago. "Pyrobar Gypsum Tile." Data regarding manufacture and use.

Under pressure of the necessity of securing the utmost from building materials, which must be of moderate initial cost and capable of affording the maximum in the way of service, there have been placed upon the market a large number of materials which are now so widely used that they have revolutionized building practice. Among the most useful and the most universally used of these materials are those made from different substances taken from the earth,—clay, gypsum, or other raw materials,—and the skill of modern manufacturers has made the most of the advantages possessed by these substances in fashioning products which enter into building.

Gypsum, as is well known, is a mineral found in rock formation in many parts of the world. Technically it is known as hydrous calcium sulphate, and it is mined or quarried in much the same way as coal, then crushed or ground and heated (or calcined) to drive off the molecular water and form hemihydrate or plaster of Paris. Then, when it has been worked into serviceable form by being mixed with water, the product reverts to its original rock form. This material, of course, possesses many advantages which procure its use in a number of ways, and in this brochure there are summed up its advantages when it takes the form of tile for building. It is not claimed of course that Pyrobar Gypsum Tile is suitable for wall facing or in fact that it possesses any merits upon the score of beauty of appearance. Its use is rather in the way of a structural material,

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THE wider an architect's clientele and the more firmly established his reputation, the more important it is that his name shall be associated only with work that is first class in every particular. Architects have long ago

found that Clow understands the fine points of plumbing and appreciates the importance of attention to the minutest details of performance and appearance. "Clow throughout" adds a finishing touch of quality to the architect's work.

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Manufacturers' Catalogs

THOMAS MADDOCK'S SONS COMPANY, Trenton, N. J.
"Vitreous China Plumbing Fixtures."

Anyone familiar with the type of plumbing fixtures being produced today may well wonder whether there still exist any more worlds for the manufacturer to conquer. In the matter of design these fittings seem to have reached the utmost perfection which such utilities can be made to embody, while in the way of workmanship and technical perfection there seems to be nothing further to strive for. This is true not only of pottery or earthenware of different sorts but also of other details, such as wooden seats, metal guards and faucets and other like details. Certainly the American people have all the encouragement to personal cleanliness which the most matchless of bathroom accessories could give.

No maker of such equipment manufactures fittings of a higher quality than those offered by this old and well known house, and this extremely well produced volume is merely one of many which have been issued to catalog and describe the firm's output. Within the necessarily narrow limits of a notice such as this it would not be possible to give more than a suggestion of what the volume is, but any architect or builder who values bathroom equipment of the highest possible quality should have the work on file in his office, not only because of the excellence of Maddock's line of earthenware, but also by reason of the equal excellence of other fittings of the different kinds which go with them.

THE SPENCER TURBINE COMPANY, Hartford, Conn.
"Spencer Central Cleaning Systems."

So evident and apparent is the immense superiority of vacuum cleaning over any form of cleaning possible by the use of brooms that the public was convinced of its value within what now seems to have been only a few years. But while the principle of all kinds of vacuum cleaning apparatus is broadly the same, it is quite easy to understand that the value of a portable cleaning system could hardly equal that of a cleaning system which would be as adequate and complete as a system for lighting, heating or ventilating the same building.

The value of the "Spencer System" of vacuum cleaning is well known; it has won the approval of architects and engineers and has been installed in a great number of buildings of various kinds. The system is not unduly complicated, and its installation or operation should present no great difficulty. Much depends, however, upon installing a system in the proper way and in being certain that it will be adequate to the work expected from it, and architects and engineers could therefore study with profit to themselves and their clients this brochure which goes over the subject, explaining the system and its workings and giving directions for the planning of correct installations, sure to give satisfaction.

MILWAUKEE CORRUGATING CO., Milwaukee. "The Milcor Joist Scale."

To explain the use of a special scale which the Engineering Department of the Fireproof Materials Division of this company has prepared for quickly determining the number of Milcor steel domes required on reinforced concrete construction involving the use of concrete joists, there has been prepared a leaflet or folder which is now being issued.

The Milcor Joist Scale may be applied to blue prints of $\frac{1}{8}$ -inch or $\frac{1}{4}$ -inch scale and will tell at a glance the correct number of Milcor steel domes needed for 5-inch joists spaced 25 inches center to center or 6-inch joists spaced 26 inches center to center. The scale is white celluloid, 12 inches long by $1\frac{1}{4}$ inches wide. Computations are arranged along each edge of the scale, thus furnishing the four standard computations mentioned.

Architects, draftsmen, engineers or contractors can obtain Milcor Joist Scales free of charge.

THE SERVIDOR COMPANY, 101 Park Avenue, New York.
"Servidor Service; the Best Hotel Improvement Evolved in the Last Half Century."

The perfection to which the modern hotel has been developed is not the outcome of hit-or-miss effort at improvement, but the result of careful and thoughtful study to provide every convenience which could minister to the comfort of guests. The average hotel patron enjoys the independence which a modern, well-conducted hotel affords, but to render such independence comfortable and practical there must at the same time be no lack of intelligent service. To provide such service while at the same time guarding the guest's privacy is not the difficult thing which it might seem, for a great part of the problem has been solved by the simplest of methods.

The "servidor" is now in use in so many well equipped hotels that to describe it here might seem almost unnecessary. It might be described as a shallow cabinet or closet within the thickness of the door which leads from the corridor into the guest room, this cabinet opening into the corridor upon one side and into the room upon the other. It is quite simple, therefore, for the hotel employees to deliver letters, parcels, newspapers, etc., within a guest's servidor, from which they may be removed at the guest's convenience, and clothes to be pressed or laundered or shoes to be shined may be placed in the servidor to be collected by the floor attendants and deposited again in the servidor when ready to be returned. The servidor also possesses value as a means of ventilation, all this being afforded while it is quite impossible for anyone in the corridor to see into the guest room. A careful calculation of the value in dollars and cents of the servidor's service shows that the return is out of all proportion to the installation's cost, this being in addition to the value in other ways to the hotel management as well as to the guest, large value from a small investment.

